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Trade Topics.

Lathes and Lathe Work.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY W. H. WESTON.

As the lathe is a tool so generally used in repair shops as well as in building shops, it may be of interest to say a few words in regard to the points of importance in a lathe and lathe work. It is probable that this tool is one of greatest utility in a machine shop equipment for almost any kind of work done. The kinds and variations of work which can be done on the tool are very great, and consequently there are more lathes in use than there are of any other form of machine.

It is of much importance to have any shop supplied with efficient lathes, for it is far cheaper to have good tools and the work well and quickly done than to be using a poor substitute for a lathe.

There are lathes on the market which I would not accept as a gift, to say nothing about paying out as much money as would be needed to buy a good one. A good lathe should have the best of material and the highest grade of workmanship in its construction; it should be readily adjustable, uniform and accurate in all of its movements.

Even if a lathe is bought at one-half the price of a good one and is a poor tool, it is excessively costly when the work done is considered, for the work turned out will be poor, and a far less amount will be produced than would be had with a good tool. Of course it may be possible sometimes for a good workman who receives high wages to turn out good work on a poor tool if he tries his best; but it requires much more time to do the work, and the result is that it costs far more than if a good machine had been in use. And any ordinary workman cannot produce good work on a poor tool, no matter how slowly he works.

I do not mean that it is advisable to have the best lathes in every instance where a lathe is used, because there are some shops where there may be certain kinds of work which can be done in a rough, crude way, and, as long as a lathe has ample strength and solidity about it, this may be all that is necessary to secure satisfactory results; but no matter how rough the work, it is imperative to have the machine strong and capable of hauling through its work effectively.

There is seldom any advantage in using old lathes which are so worn out as to make a bungling job; in fact, it is invariably a costly business to try to use such tools, and it is economy to put in new and efficient ones when the old become much worn. It is not always necessary to throw the old lathe into the scrap pile. Sometimes it can be put into another part of the shop, and used for a class of work which may not require a perfect tool, provided it is not too much worn and is of a solid, heavy build.

The elements of a good lathe are solidity, strength, adjustability, durability, first-class material, and the highest grade of workmanship throughout. The casting of the bed should be made thick, deep and well ribbed, in order to secure proper strength and prevent springing and trembling. A light lathe bed will destroy the whole effectiveness of the machine, this part being subject to heavy strains. If the bed is not heavy and strong it will be sure to spring, and the result is that the lathe will not do correct work. The heaviest lathe beds made are none too heavy, and in buying a tool it is important to see to this point. Thickness of metal and thorough ribbing are not only necessary, but a strong depth to the bed is of the greatest importance. Five hundred pounds extra in a lathe bed are not a matter of much extra cost, but are of immense value in the effectiveness of the tool.

The head stock should also be a heavy casting, so formed as to utilize the iron to the best advantage to secure strength. It is a common mistake to make the head stock too light. The cone should be long, with broad steps, with the spindle of a high grade of hammered open-hearth steel. The spindle journals should be long and large in diameter, to secure a large area of surface. Much depends on giving the journals a large area, in order to reduce wear and keep the spindle in proper alignment. Small journals, which wear loose in the brasses, make the production of accurate work impossible. The spindle brasses should be of a high grade of composition, and should be readily adjustable, so as to bring the spindle into perfect alignment, and they should be so formed as to be firm and solid in the head stock casting.

The back gearing to the head stock should be heavy, and all change gears for screw cutting should be cut in the most accurate manner. Cheap, roughly cut gears ought not to be accepted, as they wear out quickly and never do good work.

The tail stock should be a heavy casting and long on the ways. Little short tail stocks are of no value whatever for ordinary work, because they spring out of place. The means for bolting the tail stock to the lathe bed must be so ample as to hold it immovable. This part is oftentimes improperly constructed. The spindle should be much larger than it is often made, so as to prevent excessive springing when it is necessary to run it out for any given piece of work.

The slide rest should always have a long bearing on the Vs to prevent wear and to secure easy and regular movement. These Vs should be of fairly good height, and broad enough to secure a sufficient area of surface in contact to prevent wear. It is a great mistake to put in small light gears for a slide rest, for they have quite a strain on them and soon wear the teeth out of shape and get loose on the spindles. It is therefore of great advantage to have all of the gearing of a slide rest of large proportions, and so hung as to hold firmly in place with little wear. In this way a more regular and correct feed motion can be secured. This is a matter of great importance on most kinds of work.

On most lathes it is important to have the feed automatic in all directions. Whether the slide rest is to be compound or elevating must of course be carefully decided by the kinds of work which the lathe is to do. All slide rests should be firmly gibbed to the bed of the lathe, so as to hold them firmly and prevent them from coming off the Vs when boring. It is of great advantage to have them made large and heavy throughout. If small and light they are of little value in doing the work which a lathe should do, and it is imperative to have the tool post solid and strong.

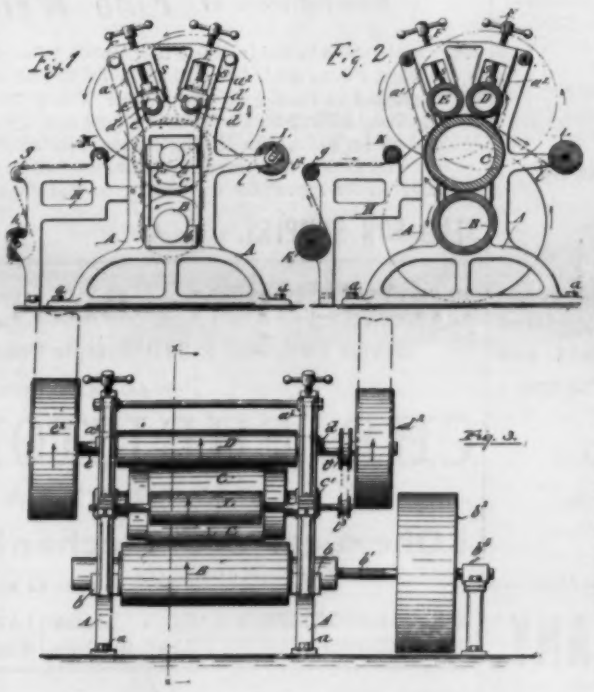
Calendering Machine.

Illustrations are given of an improvement in calendering machines, Figure 1 being a side elevation of a machine embodying the invention; Fig. 2, a vertical cross-section on line *x x*, Fig. 3; and Fig. 3, a front elevation.

The frame A is secured to the floor by bolts, *a a*. A metal roll, B, is mounted in journal boxes, *b b*, constructed in the side of the frame and terminating in a shaft, *b'*, upon which is mounted the tight pulley b^2, the shaft revolving in the journal box in the post b^3, secured in any proper manner to the floor. This roll is a friction roll, imparting its motion to the roll C, mounted in journal boxes, *c' c'*.

D and E designate two rolls, preferably of equal face, mounted as follows: *a'* and a^2 designate similar branching arms of the frame A, converging at the same angle to the face of the roll C. At *d' d'* journal boxes are constructed on these arms, in which revolve the respective shafts *d* and *e* of the rolls D and E. These journal boxes are adjustable within the longitudinal slots *s s* of the arms *a a* by means of the large screws F. This adjustment is employed to force the rolls against the calendering roll C at any pressure required.

There are three tight pulleys, marked, respectively, b^3 d^3 e^3, constructed with diameters respectively proportioned to the speed required of the respective cylinders. The pulleys d^3 and e^3 are respectively mounted upon opposite sides of the frame on the extensions of the shafts *d* and *e*, respectively. As shown in Fig. 3, these cylinders are set one in front of the other in such a manner that the roll farthest from the delivery roll will have the greatest speed.



CALENDERING MACHINE.

H is a suitable framework attached to the main frame A and secured to the floor, being adapted to receive the roll of paper and deliver the material to the calendering roll, as follows: In a slotted recess, *h*, on the front of the frame rests the bar, *h'*, upon which the material is rolled. From this bar, in the direction indicated by the arrow head, the end of the roll is carried over the loose roll *g'*, revolving in an arm of the frame; thence to and under a brush roll, K, mounted and revolving in suitable bearings in the side of the frame; thence between the cylinder D and the calendering roll C. Thence the material is carried, by the revolutions of the pressing rolls D and E and calendering roll, C, revolved in the direction indicated by the arrow heads, Fig. 2, to the receiving roll L, mounted upon an arm, *l*, of the frame in journal boxes, l^2, Fig. 1, and adapted to be revolved in its bearings by the pulleys l^3 and l^4 and take up the material as fast as delivered.

The pulley e^2 is larger than the pulley d^3, so that the speed of the roll E may be slower than that of D.

The manner of using the machine is as described above, the material to be treated being mounted in a roll at *h'*, passed over the pulley *g*, under the brush roll K, between the pressing rolls and the calendering roll, and thence to the receiving roll.

Vertical running belts should be drawn tight enough, so that the belt will cling to the lower pulley. Laced belts often break where connected on account of friction caused by slipping and movement between the lace and belt, which wears away the lace.

The Chemist in the Sulphite Mill.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY CHARLES FERRY.

There are many proprietors and superintendents of sulphite mills who have not been taught the chemical properties of substances and who know no more of the laws of chemistry than they have learned in their practical work.

The sulphite process for manufacturing wood fibre is, in every sense, a chemical method, and involves all of those chemical reactions and considerations which are suggested by the innumerable combinations of elements in the supplies used, viz., sulphur, lime, wood, water, &c. It requires a mind trained in actual laboratory work, where in years of chemical manipulation the effects of the thousand and one combinations of substances have been noted.

The services of a chemist in a sulphite mill are not merely engaged for the purpose of conducting actual analytical work. There are other more important questions which are constantly coming up and have to be discussed from a chemical standpoint. The success with which these problems are handled usually has a very material effect upon the quality of pulp produced.

Take, for instance, the subject of shivy pulp. What does this suggest to my readers who are familiar with the manufacture of sulphite pulp? Do you say that the first probable cause of this difficulty to which your mind leaps is an ineffective screen? Is this all? Suppose that you put into service more screens and increase this formidable line or series of machines through which the pulp must pass before it reaches the wet machine, until you have exhausted your floor space. What is the result? This mechanical device has been the means of a severe loss of coarse, half cooked stock, and, while you may have improved the appearance of your pulp, you have thrown out of your screen enough raw spruce wood shives and chips to net you a snug little profit had they been properly cooked in the digester.

Now this difficulty presents a different problem, and its origin passes from the machine room to the digester room; but in the meantime the manufacturer has received innumerable complaints from his customers, with positive threats that they will be obliged to purchase their pulp elsewhere unless its quality can be improved.

Yet the theories of the sulphite manufacturers are hypothetical, and not in any way based upon intelligent chemical reasoning or tests. You must remember that the digesters are yet cooking pulp, and that the stock continues to issue from the machine in about the same condition as when the fibre was first criticised. The treatment of the wood in the digesters is almost wholly chemical, and, before any changes are made in these methods of procedure, a chemist trained in the chemistry of sulphite liquor and in the process of cooking sulphite fibre should give the matter close investigation and very careful thought. Do you tell me that this trouble, specific as I have made it, cannot be traced further back than the digester room? The chemist would probably accomplish as much in an hour as the purely mechanical genius would in a week, and it is possible, yes, quite probable, that the cause of the fibre running dirty would be found in an error of the acid makers. This is only a single example of how the chemist, if available, would speedily review the whole matter from his standpoint—which is certainly the most important to the sulphite fibre manufacturers, and, in a manner peculiar to his own methods of interpretation, locate and remedy the trouble. It only illustrates how effectual his methods are in the time of the manufacturer's perplexity. The other and all important advantage in having a chemist associated with the sulphite mill suggests the number of improvements which are always possible there. We do not have to conceive of great inventions, applicable to every mill in the country, to discover where changes can be made which will prove of infinite value to our own plant, but before these changes can be made we must consider very carefully how they will affect the chemical reactions and system of the process.

Every day, and almost every hour in the day, sulphite fibre manufacturers are discussing matters pertaining to their own mill, in which good sound chemical judgment is sure to act as one of their most important counsels. Therefore, while you are considering the advisability of employing a chemist, do not try to estimate his value to you by the actual number of analyses which you think you will be able to find for him to execute from morning to night, but be sure that you select the right sort of a man; give him work to do which will keep him about the mill, and at the end of the year decide for yourself if he is worth the salary you are paying him. When this reckoning comes, you should recall the number of instances in which you have gone to the chemist for advice and how often he has explained the chemistry of any special detail of the process which is not perfectly clear to you.

Then there is a certain individuality about the chemist's methods which are characteristic of his profession, and are acquired only by chemical laboratory and classroom training. While his thoughts are naturally confined to chemical channels, the development and execution of all of his ideas are upon a scientific basis. By this I mean that his investigatory work is not only carried along in a systematic way, but that each step is carefully planned in harmony with definite scientific laws. In other words, he has a reason for everything new which he attempts, besides that deep insight into the probable behavior of each chemical element, under certain definite conditions, which invariably guides him to successful results.

I think that manufacturers are apt to look at this matter too conservatively, and, instead of conceiving of a plan by which the chemist will be given an opportunity to make himself indispensable to his employer, the latter concludes that he will be able to manufacture sulphite fibre without the assistance of any chemical advice. No doubt his mill will produce fibre just the same, even if there is not a man in the plant who understands the actual chemical reaction which takes place when sulphurous acid comes in contact with milk of lime, but in taking such a superficial view of the matter the manufacturer fixes his destiny as a fibre maker, and establishes the history of his plant. In striking out this feature he deprives himself of participation in all those improvements of a chemical nature which progress is as sure to bring to the sulphite mill as any other industry, and which, in this case, will be in the chemist's field. In his failure to employ a man about his works who has been correctly drilled in chemistry, the manufacturer is incapacitated for appreciating new and valuable pieces of machinery or improved methods. It is one thing to tell a strong and efficient piece of machinery, but it is far more difficult to be able to anticipate its chemical effect upon the finished product.

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research and production. I think that most manufacturers recognize these two departments as of equal importance to the success of the plant. There are those, however, who have not even tried to venture outside of the limitations of the old methods which they have followed for many years. The reason why people fall into narrowmindedness possibly is partially due to indifference, fear, or because their attempts to carry on investigations have always resulted to their disadvantage. There is far more which remains undiscovered in our industrial world than has yet been demonstrated to us. Under the circumstances I cannot become reconciled to the fact of our being fearful lest we spend our time, thought and money in these directions without any prospect of returns. It is a mystery to me that any of us can afford to let our minds and hands remain idle for even a day in our various departments of research.

This is an extremely progressive age, and, in most cases, manufacturers are availing themselves of every means for acquiring improved machinery and methods for cheapening their production. We can feel the pressure of that intense strife among men who are earnestly seeking a higher degree of perfection which demands the skill and thought of the best scientific talent to be obtained. Our high standard of efficiency advances year by year, and today we find ourselves endeavoring to reach a vantage ground of which we even knew nothing a century ago. If one wishes to enjoy continuous success nowadays, it is not safe to practice "resting on our oars" for any length of time. The world is moving on at a greater rate of speed than it was fifty years ago, and the manufacturer who remains inactive for a time soon finds himself distanced by his competitors and utterly incapable of producing satisfactory fibre at a favorable cost.

All valuable research in our sulphite mills requires chemical and scientific knowledge, the necessary apparatus and facilities, and plenty of encouragement. Many practical investigations are yet prosecuted in an unsystematic manner, and from no theoretical standpoint. A technically trained man should be engaged for such work. If he has only theoretical knowledge, without any everyday mill experience, he is sadly handicapped. Where the one man is weak, the other is strong, but both are equally unable to adjust difficulties which always arise in perfecting mill methods. Their shortcomings are diametrically opposite—one the complement of the other. The man who carries on such research should be well informed on laboratory and factory work. His experience should make it easy for him to apply scientific theories in practice, and see how practice, in all its mysteriousness, refers back to science again as its sponsor.

No matter how humbly the expert enters upon his work, he is sure to meet all sorts of innovations at the start, and probably is expected to utterly revolutionize not only the business of the company which employs his services as soon as he leaves college, but, in a mild way, the whole sulphite fibre industry. There are practical men who apparently come seeking an explanation for something which they have observed in their mill work, but before you have had even an opportunity to catch sufficient breath with which to expound a few elementary principles of chemistry and physics, by way of introduction as bearing upon the subject, they have politely interrupted your dissertation with such an incoherent, diabolical assortment of meaningless terms—their explanation of the phenomenon, and, in their opinion, the only one—that you gradually find yourself subsiding and becoming transferred, as it were, from the invisible lecture stage to a back seat in the audience room. The people who ask and answer their own questions are usually following the wrong path—if not altogether in the wilderness.

We need scientists to solve the problem connected with the manufacture of sulphite fibre, to bring us to the results by the most expeditious method, and to guide us and not let our investigations be in wrong directions, which would terminate in utter failure. We want technically trained men to examine and limit the field of research along whatever line we are working, in order that we may always concentrate our forces in the right channels. Those who have carried on experimental work to any great extent appreciate how truly their success depends upon the hearty sympathy, assistance and co-operation of those in whose employ they happen to be engaged.

The scientist must have sufficient funds in order to provide himself with the essential apparatus for conducting his experiments. He can see what he needs for an equipment and such necessities should not come to him begrudgingly. I can imagine nothing more humiliating or which would destroy the ambition of a student quicker than, in the midst of some important problem, to be told by one who knows nothing of the surrounding conditions of the work, yet from whom all material resources must come, that his requisitions for laboratory apparatus are unnecessarily excessive. When the scientist asks for bread, do not give him a stone. Perhaps he will try to explain why nothing short of what he wants in his laboratory will suffice for successfully developing an idea which is slowly crystallizing into a new method of practical value. Remember that it is not possible for him to demonstrate to anybody else, as clearly as he can see himself, how indispensable this new requisition for apparatus is to him without modification. If this expert is a man of promise and trust, and from whom much is expected, give him the facilities for which he asks willingly and with some suggestion or word of encouragement which will induce into his veins a certain ambition and desire to reciprocate with the best results that his industrious efforts can bring. Here is just where the word *economy* cannot be applied in the same sense as it is to mercantile and industrial pursuits.

Do not think your scientist extravagant and useless because three ideas out of five develop into naught. If he is energetic, persistent, his failures are all valuable lessons, which in time will be the tools to be used later in shaping some invention or improvement. If successful, his achievements will reimburse you a hundredfold beyond the cost of his services and expensive apparatus. The great tendency is for many of our large industries to force their laboratory, physical and chemical, down to the same economical basis as that upon which goods are produced. This is a vital mistake, and an evil which hampers many of our brightest students, who are well fitted for their work and have shown evidences of great promise, although helpless in attempting to remedy such a difficulty. They become so restricted in their allowance for facilities that they, through sheer disheartenment and indifference, drift into routine office work. Many a valuable scientific man has lost all interest in his profession because of reasons similar to this. Do not bring your laboratory and workshop expenses, which are devoted to experiment and research, down to the lowest possible notch, for by doing so you are squeezing out of this department its productive nature, or, in other words, so effectually tying it, hand and foot, that it will die from want of freedom and activity.

Correspondence.

PHILADELPHIA.

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, Pa., March 11, 1896.

The Trades League of Philadelphia is an enterprising organization. Its benefits are widespread among commercial interests, and are being felt by all of its constituents. A movement was undertaken some time ago by that organization to form among its other departments a freight bureau, which would look to the protection of the merchant and manufacturer from the unhappy discriminations which will creep in among a large and busy metropolitan centre. The efforts to bring about just what was desired at that time were not successful, partially perhaps from the lack of foresightedness of all of those who should have participated in bringing about the formation of the bureau. The movement has been revived and the co-operation of the Board of Trade and Business Men's Association with the Trades League will doubtless accomplish the purpose. Several meetings have been held by committees, which know the value of joint action and in a few days will have their plans for operation complete. A competent man will be placed at the head of the freight bureau and will give it his entire time and develop its functions. It is not the idea in forming such a bureau to antagonize the railroads or create a prejudicial feeling which might revert against the best interest of any business house, be their volume of business ever so small, but rather by good hard business sense and just influences have some control over the application of the features of charges in transportation, city deliveries, and demurrage rates. The men who are taking the initiative in this movement are sincere, and are contributing valuable time gratis for the general good of all.

Unselfishness is a virtue which ought perhaps to have been placed among the big three. Yet there are plenty of big-hearted men who will give of their time unstintedly when the good of the majority is manifest. I am reminded of how these same men, whose time is represented by dollars every business hour of the day, and all other busy business men are so often imposed upon in social ways during the hours when only business matters should be broached, and yet courtesy and tact forbid them to "call down" the intruder. The apt little sign "This is my busy day" has served a good purpose when appearing in a prominent place in one's office. Some of the wise heads, whom we all revere, have put it thus: "It takes all of my time to make a living"; "A friend in the evening is worth fifty during business hours"; "Social calls during the day are out of place"; "I am busy, very busy"; "D—n a man who will occupy your time when you have work to do"—and so on. All good and to the point. The readers of THE PAPER TRADE JOURNAL are privileged to have any one or more of these engrossed and placed on a convenient easel.

The failure of the Albion Paper Company, of Holyoke, is a great surprise to the paper trade interests here, and while I believe that few, if any, in Philadelphia will suffer directly by it, all are sorry that there should be reason for it. It is recognized widely that prices are too low and that if higher prices are not obtained by the manufacturers evil results may grow more general. Business is being done by all here in volume which cannot be complained of, perhaps, but all feel the need of more profit on goods handled and capital invested.

A. G. Elliot & Co. have just accepted the Philadelphia agency for the "Perfect" safety paper, manufactured by the Perfect Safety Paper Company, of Franklin, Ohio. The paper is especially prepared for making checks and drafts, and, differing from the safety papers heretofore offered, can be made in any color and is a smoothly woven paper It is said that this particular paper is the result of years of work and experiments, and the result now is all that could be desired. Any erasure or application of acid upon it tells plainly. The lithographers and bank-note printers hail it with delight.

Among others who have called among the trade during the past two weeks representing the manufacturers of paper are: Mr. Powers, of the Powers Paper Company, Holyoke, Mass.; Mr. Russell, of the Russell Paper Company, Boston, Mass.; Mr. Pratt, of the Hollingsworth & Whitney Company, Boston, Mass.; Mr. Craft, of the Geo. C. Gill Paper Company, Holyoke, Mass.; Charles Miller, of Averill Park, N. Y.

Business in rag and paper stock lines continues stagnant. The demand is very light and white stocks are small, yet sales are so poor that prices continue on the old level. Quotations are as follows: No. 1 white, 2¼@2⅜c.; No. 2 white, 2⅛@2¼c.; blues and thirds, 1⅝@1¾c.; colors free of black, ¼c.; blacks, ¼c.; hard white shavings, 2⅛@2¼c.; soft, 1⅝@1¾c.; No. 2 white shavings, ⅞@1c.; mixed shavings, ¾c.; book stock, ⅞@1c.; manillas, ¼@⅜c.

In the chemical market there is little to chronicle. Bleaching powders are much easier in price and Rudder bleach is being sold freely by the United Alkali Company, independently of J. L. & D. S. Riker, their agents here. Bleach is quoted at 1¾c.; 48 per cent. caustic soda ash at 1⅝@1⅞c.; 58 per cent. alkali, 95c. for 48 per cent.

To-day is blustery and the March winds are full of snow. Not the kind of Easter weather we hope for. RETLAW.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, March 12, 1896.

It seems impossible to give expression to a single statement which might convey an adequate idea of business conditions in this neighborhood, unless it be said that they are practically a duplication of existing conditions in other paper making sections.

Little of an encouraging character has awakened the usual enthusiasm of the Miami Valley trade, and if there is a whit of latent spirit it is evident that it will remain in hiding until spring opens a broader avenue. In times of activity this section is as wide awake as any of the established centres, but in the pending depression little is astir outside of the ordinary lines.

The event of deepest concern to the local trade, or rather of the broadest local interest, transpired this week when Thos. B. Reynolds, secretary-treasurer of the "late White Paper Company," turned up rather unexpectedly among his own flock. It is easily remembered by those who have followed the sensational turn of affairs of this lamented concern that a Miamisburg manufacturer, who lost money in the collapse, issued a warrant for the arrest of Mr. Reynolds at the time President W. W. White was taken into custody. The affidavits against both officials were substantially similar in their charges, differing only in the amounts involved. When Mr. White was arrested a search for the secretary-treasurer was instituted in this city, but he was not to be found. In fact, since the failure several months ago he has been conspicuously absent, and rumors, as usual, as to his whereabouts were rife.

The same grand jury which reported three indictments against Mr. White returned similar indictments based on the same allegations against Mr. Reynolds. It was generally understood that Prosecuting Attorney Kumler and the police authorities intended to effect his arrest if possible, but the attempt was never made, as Mr. Reynolds perpetrated a surprise by coming home unattended and unannounced. The members of his family were prepared for his return, as were also his attorneys, but aside from this, so far as known, few were aware of his intended home coming.

Upon his arrival here in the evening, he went direct to police headquarters and stated that he understood there was a warrant for his arrest. He was answered in the affirmative and then expressed his willingness and desire to meet the charges. Mr. Reynolds was escorted to the county clerk's office by Chief Farrell, while the prosecuting attorney and Mr. Reynolds' attorneys, Messrs. Nevin and Sprigg, were called, and the bond was fixed at $3,500, which was promptly furnished, with Mr. Reynolds' mother and brother as sureties.

In reply to questions, Mr. Reynolds says that he has been beyond the reach of the mail and telegraph, and that as soon as he heard of the indictments he completed his business and hastened home. "I do not propose to be trampled upon, and am here to meet the charges," he said. He declined to discuss his absence and whereabouts, further than simply saying that he was away on business.

There are two indictments against him for obtaining money under false pretenses and one for embezzlement.

When Mr. Reynolds first left it was stated that he went to Colorado to look after mining interests in that locality, which, it is reported, were proving to be unfortunate investments. One fact is assured: he missed a tiresome and crucial examination in a police court, leaving the president of the firm alone and unaided to face the music.

Mr. Reynolds will likely be tried in the higher courts at the same time with Mr. White. The same law firm will defend both defendants.

Thomas Allen, a veteran paper dealer, whose warehouses were located in the East End for years, but who a few years ago retired from active business, died at his late home in North Dayton last week well advanced in years. He was a pioneer dealer, and supplied many surrounding towns by the wagon delivery plan for a decade with unusual success. Two sons were interested with their father.

Christian Lewis Dill, ninety years of age, said to be the oldest printer in the country, died at Germantown, this county, this week. Mr. Dill was born on August 20, 1806, in Lehigh County, Pa. He entered a printing office in Dayton in 1824, and witnessed the remarkable progress of the

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printing art with a great deal of pride and satisfaction, although he has not been actively at work for years. Not more than a year ago, however he stepped into an office here and surprised the typos by setting a few stickfuls. His swiftness and apparent ease of motion were surprising and wonderful in the extreme; but the last "30" is in.

The Oglesby Paper Company's plant has been equipped with a furnace, while the Jacoby Paper Company has closed a contract for the same character of work. It is understood that many concerns contemplate the introduction of a furnace of a new pattern which is effective in economy of fuel.

Little of interest developed in the cases of the various banks against the Friend-Stebbins Company, outside of filing answers, &c.—the usual legal recourse—this week. The court will test the merits of the cases, although it seems that the first round, in the release of the attachments, has been won by the defendant firm with hands down. Will it be a Fitzsimmons-Maher "go"?

The Perrine Paper Company's mill whistle after awakening from a dreary nightmare the other morning early, sent out a shrill toot which continued to pierce the ethereal regions until the whole neighborhood of Franklin and Dayton was up in arms. In Franklin the fire department responded promptly, and the other mill men, supposing that a big conflagration was raging "somewhere," joined in the vociferation with annoying gusto. The play of whistles was fantastic and grotesque. The Perrine whistle is a mischievous medium of alarm—it should be squelched or muffled.

Col. W. P. Orr, general treasurer of the American Straw Board Company, intends to push his interests in the Congressional district directly north of the historic third Ohio. If he is really in earnest there is little question that he will succeed. Colonel Orr has served in the Legislature, and also, it is thought, in Congress, where he now seeks a seat. He has held many prominent State positions, and is peculiarly fitted for political life. The colonel is immensely wealthy. While in the city the other day he said: "I commenced life as any other ordinary man, and have earned every dollar I possess by good, honest labor. There is not a manufacturing concern in Piqua in which I am not interested, and nobody can say that I ever had a strike or that the men did not receive good wages for their work and get paid regularly. I believe, and I know, I have the support of the workingmen of my city, because there is hardly anyone there in whom I am not personally interested."

It is also stated that the Hon. John Little, who has handled such large cordage interests in Xenia, intends to show his strength in the forthcoming compaign. This part of the State invariably furnishes well seasoned political timber.

It is stated upon good authority that the order for sixty-six water wheels just received by the Stilwell-Bierce & Smith-Vaile Company, of this city, is one of the most extensive ever accorded an American manufacturing concern. This statement comprehends a great deal.

The wheels are to be placed in the Lachine Rapids (St. Lawrence River), just above Montreal, Canada. Certainly the gearing, shafting and all necessary equipments are included in the contract. The power from the wheels will be transmitted, electrically, to Montreal, where it will be used for various purposes, including lighting, operation of street cars, &c.

The Lachine Canal around the rapids was begun by the Canadian Government in 1821, and was completed five years later at an original cost of more than $488,000. Its dimensions at the time of construction were 28 feet wide at the bottom, 48 feet at the water line and 4½ feet deep, with seven locks, each 100x20 feet. The canal is 8 miles long and forms one of the splendid improvements completed by Great Britain for the general benefit of the Dominion. However, the greatest improvements are in evidence at Sault Ste. Marie, Ont., where the immense locks are located. A few more generous undertakings of this order at this time would greatly aid business conditions, and it may be said without hesitation that Canada's natural advantages will admit of further artificial improvements. Let the good work progress!

The completion of the locks at the Soo resulted in the erection of the largest pulp mill in the world on the Canadian side, and this spring will mirror its beneficial advantages on the American border. The Dayton Globe Iron Works Company manufactured the turbines used in that extensive plant.

If Canada continues to improve it must be in direct touch with America; and where in America is there a livelier city than Dayton? Even Great Britain seems to recognize its universal importance and worth from an industrial standpoint.

In securing this order the Stilwell-Bierce & Smith-Vaile Company is to be warmly congratulated, although the city in general must not refrain from accepting the same courtesy. Dayton's interests and that of its manufacturers are sympathetic.

M. V.

NORTHERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., March 12, 1896.

The talk along the Black River and in this city is about the action of the State Board of Health, which has or is about to issue its mandate to keep the Black River clear from sewage. This city secures its water supply from the river, and the water is said to be foul owing to the large amount of sewage which it receives from the various towns and mills which line the banks. An epidemic of fevers in the city is said to be traced to the river water. While it would be a very good thing for this city, the towns and mill owners want to know where they are to drain off their refuse. The Black River has been the natural course for all sewage since time immemorial, and what all of the towns and mills are to do is the question. From the present sentiment it looks as if they would rebel and fight such an order. This city, if it wants a pure water supply, will have to do as other cities have—go to some pure body of water, some inland lake high enough up to give force to the water to raise it to the topmost floor of the highest building in town. Of course this is rather expensive, but it is the safest in the end.

The pulp mill improvements in the H. Remington & Son plant at Black River are under way and will prove an important addition to the company's plant. One set of improved McCormick turbines has been ordered, and will shortly be in place. These will develop 1,000 horse power. If these turbines work successfully in all probability another power will be developed on the Black River, and another mill will be erected this spring. The machinery will be put up before the spring flowers bloom and as soon as the high water will permit.

There are nearly 100 men employed on the average at the C. R. Remington & Son mills, which are running all of the time. The old attic in one of the buildings is being reconstructed by the carpenters and millwrights, and will be turned into a finishing room, and the machinery will be moved from the lower floor, where it is now located, to the top story. This will prove a great convenience in handling the product.

George Fairbanks, formerly with C. R. Remington & Son and other mills, has opened an office in the Flower Building, where he has hung out his "shingle" as a mechanical engineer. Mr. Fairbanks will make mill construction a specialty. He is a practical draughtsman and surveyor.

The many friends of A. D. Remington, the paper manufacturer, have heard a great deal about his California gold mine, but nothing in detail. THE PAPER TRADE JOURNAL correspondent is able to tell a little something about this "snap" of Mr. Remington's. The company is called the Carson Creek Mining Company, and Mr. Remington is president. It is capitalized at a cool million, and, by the way, C. H. Remington is also in the "snap"; so are some other Watertown men. Last fall a telegram was received from the superintendent of the mine that a vein of the richest ore had been discovered, measuring some 1,000 feet long, 47 feet wide and from 1,500 to 2,000 feet deep. Forty miners were put to work, and the same number of teams. The result was that 3,000 tons of ore were crushed the first month. Now the number of stamps has been increased, and 5,000 tons of ore are being handled each month. That the Remingtons will become even more wealthy than they are is very easy to predict.

F. H. Hinds, of this city, the well-known civil engineer, has been employed by the Skaneateles Lake commissioners in the water power cases. Of this commission D. G. Griffin, also of this city, is chairman. As before stated in THE PAPER TRADE JOURNAL, this commission was appointed to determine the amount of damages to be awarded to the paper and pulp mill owners against the city of Syracuse for the loss of the power caused by the city taking its water from the lake. Mr. Hines is expected to go to Skaneateles Lake and make careful measurements, so as to give testimony as an expert surveyor and civil engineer. As before stated in THE JOURNAL the case involves important interests and large amounts of property.

The Dexter paper and pulp makers and other labor interests in that town have formed a branch of the American Federation of Labor. The town has heretofore been unrepresented to any great extent in the ranks of organized labor, except by the Paper Makers' Union, which embraces all of the workers in the mechanical rooms of the mills throughout the length of the Black River Valley. On Monday night the Trades Assembly met here, and decided to go to Dexter Tuesday night to organize the branch. John Russell, representing the Machinists' Union; Sidney Lundon, of the printers; John Drury, of the paper makers; James Gill, of the carriage makers, and Charles Falls, of the cigar makers, were appointed as the committee to go to Dexter. They were heartily received, and a new branch, consisting mostly of wood pulp workers, was organized to the number of fifty or sixty.

W. E. T.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
64 FEDERAL STREET, BOSTON,
March 12, 1896.

The financial embarrassment of the Albion Paper Company, of Holyoke, as told publicly in the daily papers last Tuesday morning, was very unwelcome news. The announcement came as a complete surprise to the Boston trade having constant business relations with the company.

Until the meeting of the creditors is held on Saturday, at Springfield, very little in the way of prospects of settlement can be learned from those in this city who are personally interested.

Boston creditors seem to think, however, that there is a prospect of getting out of the trouble without very heavy loss to themselves, although matters may assume a different coloring after a closer inspection of the unfortunate company's affairs. Yet it is to be hoped that creditors will not suffer too much of a loss.

The embarrassment of that company will awaken a feeling of distrust against other paper manufacturers, and stronger efforts will be made to make collections, while discounts will be more difficult to obtain, conditions which may prove a little annoying to even some of the strongest companies.

The paper manufacturing concerns of Holyoke have always stood so high that the troubles of the Albion Paper Company have really staggered the trade, and those interested seem to be at a loss in trying to account for the failure. It is only another verification of the fact that the unexpected happens.

Outside of this Holyoke episode there is little of interest to talk about in local trade circles. Business is very quiet. Usually there is a good, active trade in the paper business during March, but so far this month conditions are just the other way. The weather may be counted upon as one factor to influence business unfavorably, and the weather has been very rough all along since the month opened. Then the disastrous floods throughout New England have very seriously interfered with trade, to say nothing of the damage to property and losses sustained by the various manufacturing interests. If people who complain of dull business have escaped damage from the March freshets and loss from failures they are in luck. There are others suffering from both troubles.

When commenting upon the unsatisfactory conditions of the paper stock business a few weeks ago, the small profits and the possibility of heavy losses by failures, it was not supposed then that paper stock dealers would be so soon called upon to share in another loss from the failure of so prominent a concern as the Albion Paper Company. To name those of the Boston trade holding tickets to the creditors' meeting is hardly necessary at this writing; they will be in Springfield next Saturday to help shape future developments, and may they realize one hundred cents on every dollar due them.

Garrett Schenck, of Rumford Falls, Me.; Eben Webster, of Bangor, Me., and A. N. Burbank, of Bellows Falls, Vt., are in town this week, having come to Boston to get their feet dry.

Other distinguished gentlemen of the trade reported in town were N. M. Jones, of Lincoln, Me.; Charles R. Milliken, of Portland, Me.; Eugene Daniel, of Franklin, N. H.; Ex-Governor Cheney, W. S. Holt, of Manchester, N. H.; Mr. Bartlett, of Nashua, N. H.; G. H. Boon, of Haverhill, N. H.; W. A. Whitney, of Sunapee, N. H.; J. J. Brigham, of Burnside, Conn.; Edward Wilson, of Rainbow, Conn.; Mr. Williams, of Worcester, Mass.; Charles S. Mayo, of Lawrence, Mass.; C. H. Southworth, of South Hadley Falls, Mass.; R. D. Rising, of Mittineaque, Mass.; Mr. Chamberlain, of Dalton, Mass.; Charles Callendar, of Glendale, Mass.; Benj. M. Jackson, of Pawtucket, R. I.; W. H. Pusey, of Windsor Locks, Conn.; Mr. Taylor, of Kensington, Conn.; Mr. Bardwell, A. H. Hill, F. H. Sturtevant, Geo. Crafts, of Holyoke, Mass.; K. D. Carter, of Wanaque, N. J.; Mr. Mosley, of Schaghticoke, N. Y.; F. P. Sherborne, of Philadelphia; I. R. Elston, C. W. Cook, James Conley, of New York.

Col. J. P. Jordan, of Pulsifer, Jordan & Co., is a candidate for delegate to the Republican nominating convention to be held at St. Louis. In his avowal of candidacy, Col. Jordan says: "As a pupil of Mr. Reed in the Portland High School I learned to honor the man and have followed his career ever since with the utmost approval, and as my earnest desire was that the Massachusetts delegation should be solid and unbroken for Thomas B. Reed, I then would have been rejoiced at the chance to have aided any good men in the district who would have supported Mr. Reed as earnestly as I would myself."

Colonel Jordan is very strongly indorsed by a large number of influential men in his district, and is quite likely to be one of the delegates.

A private telegram announces the death in Florida of Thomas Edwards, of Portland, Me., who was visiting there with his family. A few days ago his young daughter, who was with him, died. Mr. Edwards was treasurer of the Berlin Mills Company and president of the Williams Manufacturing Company. He leaves a widow, son and two daughters.

Charles D. Brown is doing New York this week. Those handsome diaries of his are going like hot cakes—just for the asking.

On Wednesday evening of next week, March 18, at the Exchange Club, the Boston Paper Trade Association will hold its tenth annual meeting, when officers and committees for the ensuing year are to be elected. The secretary's notice of meeting states that owing to the business to be transacted and the length of Mr. Swett's lecture on "Picturesque Maine," dinner will be served at 6 o'clock sharp. The Boston Ideal Banjo Club will furnish music. The feature of the evening will be the entertainment furnished by Edward C. Swett, of Portland, Me., and the committee feels that it has been very fortunate in being able to secure that gentleman to give his famous lecture on the attractions so characteristic of the State of Maine. Mr. Swett's abilities as a talker are so highly indorsed by the press that members of the association may count upon having a very entertaining and instructive evening. From the hundreds of press notices concerning Mr. Swett's oratorical powers the following quotation from the Boston *Globe* is presented, so that members of the association may form some idea of the elocutionary treat in store for those who will be favored in sitting at the banquet board next Wednesday evening. Just read these lines:

"Mr. Swett is admirably equipped, both by nature and by mental discipline, for the work he has undertaken. Of commanding presence, possessed of a clear, resonant voice and polished diction, he has the reputation of being one of the best social orators that Maine has produced, and at the Chicago Convention in 1892 won national distinction by his eloquent speech upon the resolution of sympathy with our distinguished fellow citizen, the late Hon. James G. Blaine, holding the immense audience of 20,000 people spellbound by his address, until at its conclusion the convention and spectators arose *en masse* and cheered for full three minutes. A correspondent of the New York *Tribune* wrote: 'It was the most eloquent and touching appeal ever heard in a political convention.'"

The value of books and paper exported from this port for the week ended March 6 was: Books, $4,345; paper, $1,949. For the previous week: Books, $1,461; paper, $5,568.

Mr. Shurtleff, treasurer of the Finlay-Shurtleff Paper Company, of Milton, N. H., was seen at the company's Boston office, Hancock Building, this week, and he stated that the company's new paper machine had just been started up and was giving good results. This machine was built by the Sandy Hill Iron and Brass Works, of Sandy Hill, N. Y. It is a Fourdrinier machine, 84 inches wide, has all of the latest improvements and is designed to run 400 feet a minute. With this machine the daily product of the mill will be increased to 15 tons, its former capacity being 5 tons. The company produces high grade manillas, and has been successful since starting in placing its paper. Its success in that particular has encouraged the company to put in this new machine to increase its production.

Edition No. 2 of the *Sprinkler Bulletin*, issued quarterly by the General Fire Extinguisher Company, of Providence, R. I., has just come to hand. It is well printed on first-class coated paper, the front page having a fine illustration of the great building known in Providence as the "Boston Store," it being the largest dry goods estab-

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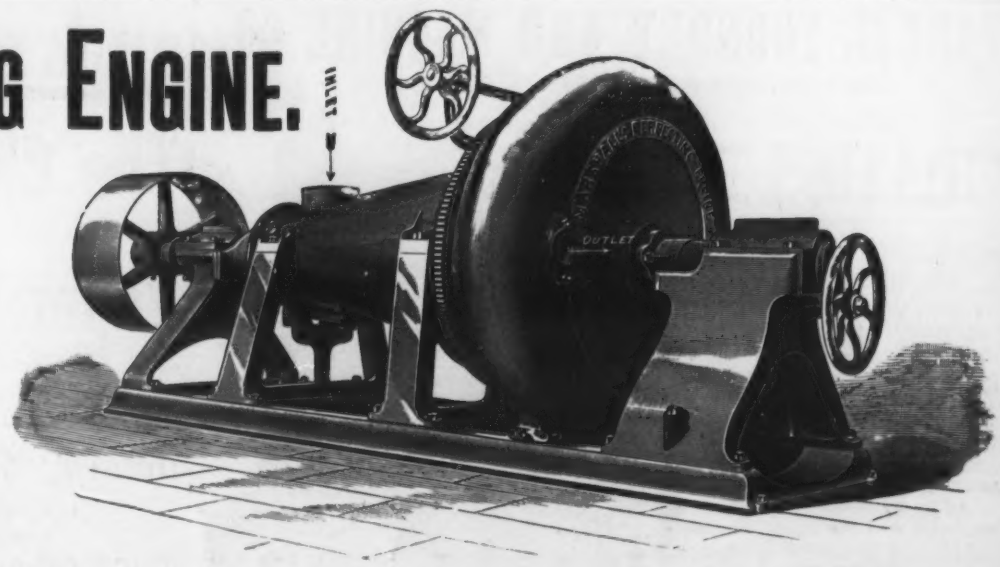

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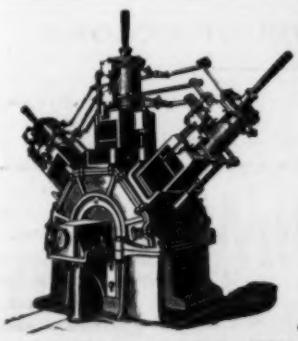

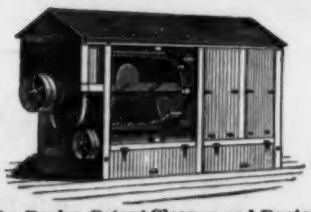

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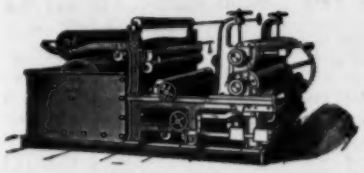

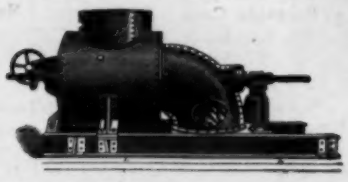

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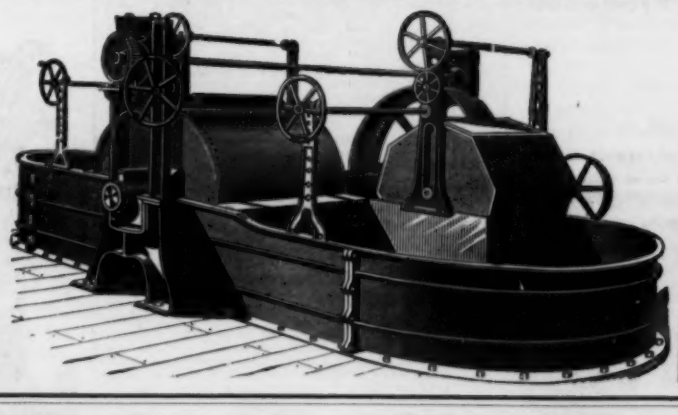

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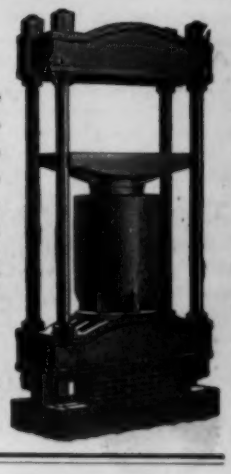

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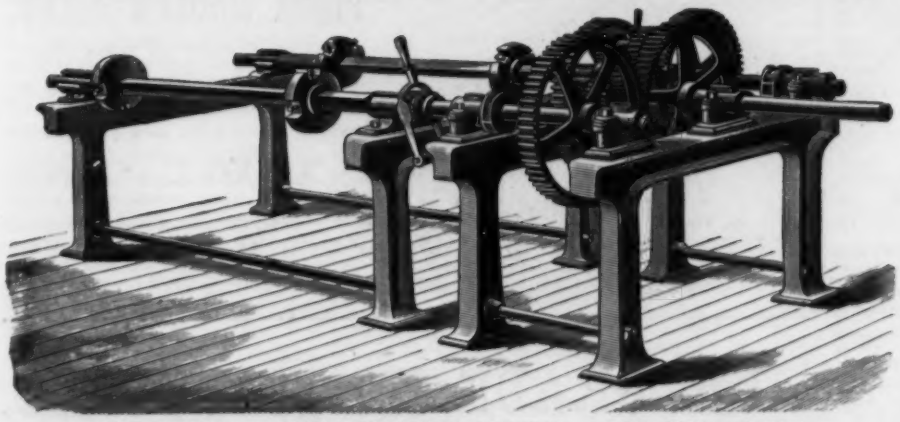

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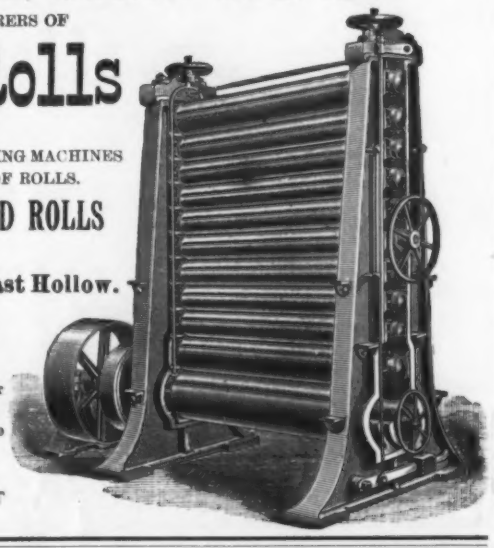

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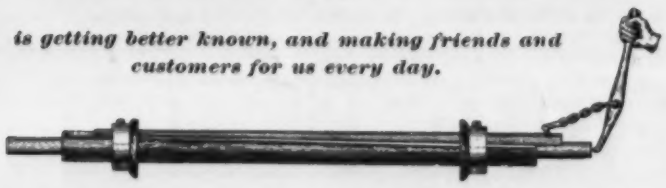

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Wagman, Thorpe & Co., Fort Miller, N. Y.
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Moore & White Co., 2 Shafts, Philadelphia, Pa.
Hon. George West, 12 Shafts, Ballston Spa, N. Y.
M. & W. H. Nixon Paper Co., 5 Shafts, Philadelphia, Pa.
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Hollingsworth & Whitney Co., 2 Shafts, Boston, Mass.
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Seymour Paper Co., Windsor Locks, Conn.
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CHAPTER II.—**Fibres.** Cellulose in its relations to the plant, the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, adansonia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres; growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots; analyses of woods; specific gravities; ash; fuel values; occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, druiners; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Resin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

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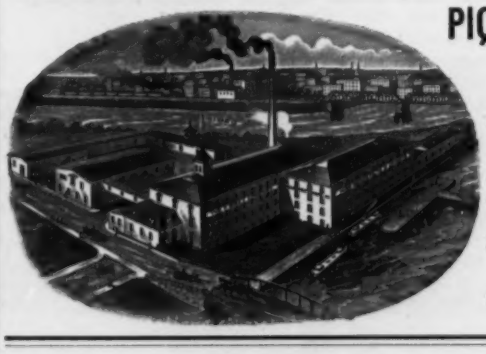

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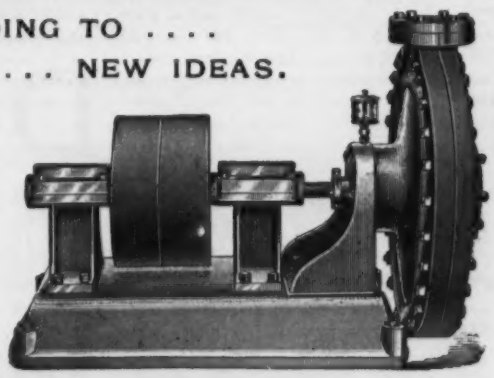

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lishment in New England outside of this city. This building, a spacious, six story structure, is most thoroughly equipped with the Grinnell dry pipe system of automatic sprinklers within and with the Grinnell cornice sprinklers without. It is related that a fire broke out in the building a few years ago at midnight under conditions which must have resulted in a very destructive conflagration had it not been for the protection secured by the Grinnell sprinklers. The *Sprinkler Bulletin* contains much valuable information concerning the merits and value of automatic sprinklers as a means of preventing heavy losses from fire in stores and factories. When it is determined to put in a sprinkler system the question arises what system is the best to use. This question the *Sprinkler Bulletin* answers; facts, figures, and testimonials from those best able to judge of the value of sprinklers being presented in its pages, from which statements anyone interested can be safely guided in making a selection of the kind of sprinkler service to secure. Parties contemplating the installation of a sprinkler service should write to the General Fire Extinguisher Company, Providence, R. I., for a copy of its *Sprinkler Bulletin*. DELESDERNIER.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., March 12, 1896.

The affairs of the Albion Paper Company have of course been the principal theme this week, both in and out of the trade, and much has been said about the failure of the company to meet its liabilities.

There is much which will remain a mystery until the meeting of the creditors at Springfield on Saturday afternoon, when a statement of the assets and liabilities will be made. Some new developments are likely to be brought out then.

The affairs of E. C. Taft and his manner of living in years gone by are also fruitful topics. Mr. Taft is a sick man, and his days are probably numbered. For this reason there is considerable sympathy expressed for him. His residence has been besieged by newspaper reporters this week, all anxious to get some statement from him. Each and every one has been courteously but firmly denied an audience by Mr. Taft's butler; therefore no paper has been able to print anything as coming directly from the treasurer of the Albion Paper Company.

There are several morals to be drawn from the failure of the Albion Company. It is not well for those in authority to exceed their income in such a manner that the business of the corporation must suffer by being drawn on for funds to such an extent that its affairs are embarrassed.

There is such sharp competition in the paper trade nowadays that the margin of profit is cut down to the limit, and the management must be very conservative to keep a balance on the right side of the ledger.

If it was possible to apply the cathode rays to the condition of business this week the revelation would not be very cheering. It is no worse than it has been for a number of weeks, but the flood of last week made more or less trouble to add to the burden. The mills are all running as usual, but the supply of orders in many cases does not cover the actual production; hence there is some accumulation of finished goods.

Two more corporations filed annual reports recently. The Linden Paper Company makes this return relative to its affairs: Fixed capital, $400,000; capital paid in, $400,000. Assets—Land, water power, buildings and machinery, $550,000; cash and debts receivable, $81,440; manufactures and merchandise, $217,699; total, $849,140. Liabilities—Capital stock, $400,000; debts, $443,787; profit and loss, $5,352; total, $849,140. The Whitmore Manufacturing Company reports: Fixed capital, $25,000; capital paid in, $25,500. Assets—Machinery, $25,000; cash and debts receivable, $82,724; manufactures and merchandise, $90,514; total, $198,238. Liabilities—Capital stock, $25,000; debts, $82,072; profit and loss and reserve for depreciation, $91,166; total, $198,238.

Probably no one in this city felt the death of Governor Greenhalge more keenly than ex-Congressman William Whiting. He made the acquaintance of Governor Greenhalge at Washington and a warm friendship sprang up between the two men. He admired his straightforward honesty and his fearless course on all matters of public interest. He was an ardent supporter of the deceased statesman during his terms as Governor of the Bay State.

Homer J. Stratton, of the Norman Paper Company, has just returned from a business trip to Pennsylvania.

Dwight W. Post, formerly of the Beebe & Holbrook Company, has become traveling salesman for the Hurlbut Paper Company, of Lee.

A. W. Esleeck, treasurer of the Beebe & Holbrook Company, who has been seriously ill for a week or more, is reported to-day as likely to recover.

Fred M. Towne, who represents F. Bredt & Son, of New York, on the road, is spending a few days with his family at Williamsett.

The Connecticut River is on its good behavior again, and will not have another 'tear" until next spring. H.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., March 10, 1896.

The condition of business in this valley remains about the same as has been reported for the few weeks last past. There is no particularly noticeable improvement or retrogression. Neither the demand nor prices received are satisfactory.

The fate of the proposed new water power company is yet undetermined. It is reported that all interests are now harmonized except those of the Green Bay and Mississippi Canal Company, which is the only concern now holding back and neglecting to say just what it will do. It is very much feared that this policy of procrastination will operate disastrously for the new company. There seems to be about an even chance for the organization of the desired corporation.

Meanwhile the water power is getting worse. The fact that the cold weather continues and keeps the snow from melting, together with the reduced amount of water drawn on account of the low stage in the lake, makes water power pretty poor, and most of the work is being done by the steam engines. Communications have been received within the past few days from representatives of the Government engineering department, saying that the Government will expect the water to be at the crest of the Menasha dam by the 15th of next month in time for the opening of navigation, and will insist that the water shall be held there in the future. All of these complications seem to cry with one voice for the organization of the new water power company.

As was predicted in my last letter the new cases against the Kaukauna manufacturers for illegally drawing water for power purposes have proved a complete and ridiculous fizzle. At the preliminary examination held in this city last week a call was made by the defendants' attorneys for the plaintiff's papers in the case, and as they were not in court the manufacturers were discharged upon motion of their attorneys.

Quite a merry war was instituted at Kaukauna last week, resulting from the refusal of the Badger Paper Company and the Thilmany Paper and Pulp Mills to pay their taxes, on the ground that their assessments were too high. The city authorities made a levy upon some of the personal property of the paper mills, consisting for the most part of pulp wood, whereupon the manufacturers hurried to Appleton and secured injunctions restraining them from so doing and compelling them to make restitution. For the present a truce has been declared, with an armed neutrality on both sides.

The example of the Kaukauna manufacturers has been followed to a certain extent by the paper companies of Menasha. The Gilbert Paper Company, Strange Paper Company, and Paul Paper Company all petitioned the council of that town to reduce their assessments, and upon the refusal of that body to do so they have refused to pay their taxes. There is talk of levies in their cases, and the matter will in any event be taken to the courts.

Last week your correspondent spoke of a new mill to be built in this neighborhood. This week it will be possible to give some additional particulars in regard to it. The mill is to be located on the Wisconsin River and is to be one of the links in quite a chain of improvements which are to operate along a certain 8 miles of that river, between Nekoosa and Centralia. To speak of the matter in its logical order, it may be well to say first that the Nekoosa Paper Company is at present engaged upon the work of putting in a large sulphite plant. This plant is to be of about 30 tons daily capacity, which would be largely in excess of the needs of the Nekoosa mill itself, with its present two machines. Some time ago your correspondent announced that this mill was to be provided with a third machine, and he is now informed that the contract for building it has been let to the Rice, Barton & Fales Machine and Iron Company, and will be 100 inches wide. In addition to this, however, it is now proposed to build a mill at Port Edward, a few miles from Nekoosa, which is to be equipped with two paper machines and a ground wood plant. The Nekoosa sulphite mill will furnish sulphite for the Nekoosa mill, the Port Edward mill and the Centralia Pulp and Water Power Company's two paper machines, all of these institutions being allied in ownership and management. This new arrangement will form a strong combination in the trade and will make itself felt in the markets.

N. Johnson, one of the principal men interested in the new mill of the Grand Rapids Pulp and Paper Company, was in Appleton on business Saturday. He said that this institution is now making ground wood, and it is expected that the paper machines will be started in about two weeks. Wesley Guie, formerly superintendent of the plant of the Combined Locks Paper Company, is to be the superintendent of the Grand Rapids mill.

Your correspondent to-day interviewed John Strange, formerly of the Strange Paper Company, who was reported to be about to organize a paper company to be called the Mississippi Paper Company, with mills to be located at Sauk Rapids, Minn. Mr. Strange said that the organization of the company has not yet been effected, and that he cannot tell exactly when it will be accomplished. It is not now so well assured as it seemed at one time that the mills will be located at Sauk Rapids. He has options upon two other properties, whose merits he is investigating. He is determined to go slow in the matter and make no mistake. He feels that in the West the principal thing to be considered is to get a location on a water power where there is practically an indefinite supply of timber to be drawn upon. In the present condition of business he feels that cheap raw material is the great question which will be the making of a paper manufacturing enterprise, and that is what he is looking for now.

General Manager Taylor, of the Pulp Wood Supply Company, says that the amount of pulp wood received by his company this year from the region of the "Soo" will amount to about 20,000 cords.

William Buchanan and A. B. Weissenborn, of Springfield, Mass., arrived in Appleton this week to take charge of the new Appleton Wire Works, to which reference has been made in these columns. Mr. Buchanan will be manager and Mr. Weissenborn superintendent. The secretary and treasurer will be Gustavus E. Buchanan. Upon their departure from Springfield they were fêted by the employees of the Cheney-Bigelow Wire Works. One of the looms for the new works is now ready and is being placed in position.

Thomas P. Dean, the "king clay man" of Boston, has been visiting the paper manufacturers of this valley this week.

Geo. F. Hardy, of Holyoke, is doing business on the Fox and Wisconsin rivers.

C. H. Dobilinski, of Philadelphia, arrived in Appleton this morning and is making the round of the valley. FOX RIVER.

WESTERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, N. Y., March 12, 1896.

There is nothing but politics around the mills these days. Presidential candidate are discussed, each having their supporters. When I try to talk about trade the inevitable drift into politics follows, and it seems to be difficult to bring men around to talk of anything else.

I saw A. H. Ivins, of Lockport, the other day and he was the exception. He told me that he did not have time to talk politics. He was sitting at one side of a desk and Superintendent Baggs at the other, and the way those two men were pumping questions into each other and writing matters down was a caution. There was a lull in the conversation for a moment, and I ventured to remark: "Well, I see that 'Judge' Fullerton has sold out his interest in the St. Lawrence Paper Company to Mr. Gotham." This was brought out by Mr. Ivins saying that they must write to the Brownville Iron Works about some screens.

"Is that so?" replied the gentleman, with a far-away look in his eye. I began to think that I could not break the ice, when a smile illuminated the features of Mr. Ivins, and he jumped up with the remark: "Say, do you know how Fullerton got that title of judge?" I pleaded ignorance, and he told me this story:

"Probably you don't know that Fullerton and I went to school together in New York. He started in for law and went up to the law school at Columbia, I think. It was just at the time of the Beecher-Tilton scandal, and you will remember that a Judge Fullerton was in that case. Well, we dubbed Fullerton 'Judge' after that."

The ice was now broken and Mr. Ivins told me that the beaters had arrived from Pittsfield, Mass., and the engine from Milwaukee, and the Gotham screens from the Brownville Iron Works. Superintendent Baggs also told me that the Black & Clawson Company was ready to ship the big machine just as soon as they were ready to receive it. The mill plant is nearly all completed, except the boiler and engine building. This will be put up as soon as the weather moderates. All of the old frame buildings except the pulp mill, including the old saw mill, will be removed and the space about the mill will all be cleared up. This will be done to show off the immense length of the building as well as for fire protection. Mr. Ivins was just notifying a lot of electric apparatus constructing firms that the company would desire bids on plans and specifications which would be ready for inspection on Friday and Saturday, March 20 and 21. These call for a 200 light plant for the Traders Paper Company, and for a 150 light plant for the Niagara Paper Company. There must be independent engines for each of them.

W. W. Trevor, president of the Trevor Manufacturing Company, accompanied by his family, is making a European trip. Mr. Trevor sailed on the Normannia on February 19, and only reached Naples on Monday, March 2. They will do Italy and France and return in about three months.

There is now a bill before the State Legislature which will empower the Niagara Falls Hydraulic Power and Manufacturing Company to take water from the river for power purposes. This company has all along by previous rights taken water from the river into its hydraulic canal and furnished power to all of the mills along the high bank of the canal including the Cliff Paper Company, the Pettebone-Cataract Paper Company, and the old Niagara Wood Paper Company, besides all of the pulp mills. At an expense of $300,000 the company has deepened and widened its canal so that it will be able to develop some 75,000 to 100,000 horse power all told, and seeks to secure a permanent charter from the State. This bill is opposed by the chairman of the Niagara State Reservation Commission, Andrew H. Green, of New York, who claims that the detraction of the waters of the river for power purposes is injurious to the preservation of the scenery and grandeur of the falls. Arthur Schoellkopf, the mayor-elect of the city, who is president of the Cliff Paper Company and secretary and treasurer of the power company, attended a hearing on the bill on Wednesday last at Albany. Commissioner Green was there with plenty of testimony against the power company. He had affidavits to burn and made a stubborn fight. The committee viewed the matter in a business like way, and will no doubt report favorably on the bill.

W. E. T.

The Loud Postal Bill.

MR. LOUD'S THREAT TO THE PUBLISHERS.

In the account of the American Newspaper Publishers' Association's annual gathering published in the *Fourth Estate* of February 27 Congressman Loud in his speech before the executive committee is thus reported:

"He warned the owners of newspaper properties that their chief danger was in attempting to kill a bill charged with reform, and that if they did not take their medicine in his mild measure now, then when the postal expenditures on second-class matter had mounted into even more millions than to-day the people would start a rebellion against the publishers that would mean the passage of some bill which would certainly harm them."

Under the influence of this threatened hostile legislation the representatives of the American Newspaper Publishers' Association in attendance agreed that, although parts of Mr. Loud's bill were unwelcome, it was their duty to support it. They did this with the distinct feeling, according to the *Fourth Estate*, that the bill in question abridged the postal privileges and established a precedent which might have been considered an opening wedge to really oppressive legislation. "The publishers," says the *Fourth Estate*, "have agreed to bear the burden of the Loud bill simply because they knew it was intended to wipe out postal atrocities committed under the guise of the 'dissemination of intelligence.' The fact that it did not revolt against the Congressman who cut out the pathway of postal reforms with a carelessly cruel axe is distinctly to their credit."

Many of the publishers of the greatest newspapers of the country have expressed their disagreement with the action taken by the Publishers' Association. The admirable editorial article which appeared in the *Tribune* of February 7 stated the objections to the Loud bill very forcibly in that "it threatens seriously to interfere with the ordinary distribution of newspapers. * * * The primary purpose of the second-class rate was to make possible the circulation of newspapers and magazines at small expense and enable the people far away from the centres of news and culture to obtain their periodicals on favorable terms. * * * Except for this rate the low price newspaper and the low price magazine would be impossible. * * * It is the people rather than the publishers who get the benefit of cheap postage, and to abolish it is to raise the price of publication to the subscriber.

Wilfred Patterson, of the Boston *Herald*, writes: "I do not think there can be any difference of opinion among publishers of the leading newspapers that any material increase, such as proposed in second-class rates, would certainly not be compensated for by reducing letter postage to a cent."

Mr. Loud in his interview with the *Tribune's* Washington correspondent, February 9, says that "in view of the movement in favor of one cent letter postage, it would be worth while for the publishers of newspapers and periodicals to consider whether it would not be better for them to support a moderate measure," meaning his bill H. R. 4566, "rather than oppose and perhaps defeat it at the risk of having legislation enacted within a few years which would deprive them of all the privileges that they have so long enjoyed."

It is by these assertions of the probability of legislation yet more inimical to the interests of newspapers and periodicals that Mr. Loud has sought to influence their action toward his offensive measure. Some publishers have been panic stricken by his utterances, and a circular has been issued on the strength of them by a small body calling itself the American Trade Press Association, which contains the following: "It is perfectly plain that some change must ere long be made in postal laws, and unless this takes the shape of a reasonable reform of the abuses of the present system there is much danger that an entire recasting of the postal laws will become necessary. In this case the rates for regular newspapers and periodicals will undoubtedly be much less favorable than the present." This circular also approves of the proposed abolition of the sample copy privilege, on the ground that "it renders the establishment of newspapers cheap and easy, and enables them at once to compete vigorously with those already in the field at the expense of the postal revenue. * * * The plain dictate of prudence is that the newspapers of the country should favor a reform which will make possible the continuance of the very favorable rates which they now enjoy."

It will thus be seen that Mr. Loud is himself responsible directly for all of the favorable action which has been taken by the press of the country in regard to his bill.

German Paper Trade Usages.

In view of the furore caused in French paper trade circles by the proposed introduction of a new "code of usages," it may be of interest to give a rough outline of the conditions of sale which were adopted in 1891 by the German Paper Makers' Union and which are still in force. This "code of usages" practically governs all the transactions in paper entered into in Germany as between maker and buyer. The paper is valued or sold at per 1,000 sheets, according to weight. The weights of different sorts shall be stated in the case of papers cut to sheets of a certain size at so many kilograms per 1,000 sheets, and in the case of paper in rolls, in grams per square metre — 40 inches. The size of the sheet or the length of the paper on the roll is to be stated in centimetres, any fraction to be considered as half a centimetre, and any other measurements shall be brought to accord with this rule. The normal maximum weight of ordinary cardboard shall not exceed 250 grams, or about 9 ounces, per square metre. The normal maximum weight of writing paper is to be 50 grams per square metre, except with the quality known as "post paper" from hemp, when 45 grams is to be the limit. Glazed papers are also not to exceed 50 grams, except in the case of certain special sorts, when 47 grams is to be the extreme in sheets, or if in rolls, 45 grams. Unglazed paper for bills and posters, &c., may be of a weight up to 30 grams per square metre, and silk papers 18 grams. In all kinds of unglazed paper used for bedding purposes 50 grams is the maximum. For paper hangings, white and colored, 60 grams; ordinary wrappings, made from flax waste or straw, 50 grams; wrappings from brown wood pulp, 50 grams; superior wrappings (otherwise undescribed) the same. Common straw paper, unbleached, 50 grams; parchment paper, 35 grams.

In giving an order for any paper for which the normal maximum weight has been laid down, a difference not exceeding 2½ per cent., more or less, shall be allowed between the weight ordered and the weight made. With wrappings and papers on reels a difference is allowed to the extent of 4 per cent. If a few sheets, or a small part of the paper in a roll, deviate from the mean to more than the extent mentioned above, it shall not be held to fix the valuation of the whole parcel. Any lot of paper delivered shall not be subject to question as regards trifling differences in color, purity or solidity; for the latter indeed a difference of 10 per cent. is allowed between the sample and the paper made. In the case of unloaded papers a residue of ash not exceeding 3 per cent. is allowed. Papers described on the order as "free from

wood " may be manufactured from cotton fibres, wood or straw cellulose, esparto, &c., but not from mechanical wood pulp, and, speaking generally, the presence of ligneous fibres is not to be taken as a deviation from the spirit of an order for paper free from wood. Printing papers, in default of any special instructions to the contrary, are to be delivered half sized. No order for a special class of paper not ordinarily made or stocked shall be accepted for less than 500 kilogs. (nearly half a ton), to match any particular sample, as to material, strength or shade, and a difference of 10 per cent. more or less in the quantity made as compared with the quantity ordered is allowed in parcels up to 1 ton; over that weight 15 per cent. is allowed. Further, it is agreed that in such cases the purchaser binds himself to take up to 15 per cent. of a second quality of paper; if such shall be made in the course of the run, as part of the order, a reduction of 10 per cent. off the ordinary price to be made for this second quality.

When watermarked papers are ordered the price generally charged for unwatermarked papers of a similar character will be raised according to circumstances. The weight of rolls and ream wrappings to be deducted from the invoice, except in the case of export packings, which are to be included. The price to cover delivery at the nearest station either of a railway or steamboat company. The invoiced value of the goods to be payable at three months from date of invoice, if the latter be duly accepted, or 2½ per cent. to be allowed for cash the same month.

In the case of any dispute arising, each party to name an expert to look to his interest; these latter—if they are unable to agree among themselves—can choose an arbitrator, whose decision is final and cannot be appealed against.—*British and Colonial Printer and Stationer.*

Removing Scale.

A very novel method of getting rid of scale in a boiler is credited by a Boston paper to an engineer in that city. The scale came from the use of well water. The feed pipe enters the front of the boiler just above the water line, and has slots cut in it about an eighth of an inch wide, instead of the ordinary spraying method of distributing the water, and surrounding the feed pipes in the larger pipe, about 6 inches in diameter and cut away at the top; the fee water enters the boiler and discharges through the slot in the feed, discharging all the foreign matter in the water into this catch pipe instead of into the boiler, the success of the plan depending upon having a high temperature of feed about the boiling point, when the solids held in suspension or solution in water will be deposited.

Boiler Adjustment.

In a recent case of overhauling boilers a feed pipe was taken out corroded, in which the parts were eaten away. The pipe had been arranged to enter the boiler from the top, and by use of connections was set above even with the water line, so that the pipe was successively submerged, being wet at times and dry at others. The drippings from the works were run into the feed water, which contained much greasy matter. These combined to cause corrosion, resulting in the destruction of the pipe in a short time. Corrosion accompanied by a mechanical movement will produce channeling rapidly. There was evidently a slight movement, caused by vibrations, at the elbow of the pipe which, accompanied by the continual wetting and drying process, hastened the corrosion, the grease also bring about these results.

When it is necessary to use cross belts, see that the laps will not tear up or joints sever. This can be done by keeping them separated at the point where they pass.

Belts made too tight will cause friction to such an extent that it will consume all the power of the engine. Under a given load, it is wonderful to see how much power of resistance is in a good belt. It can be strained for months, and after a short period of rest it will return to its original strength and length.

Construction and Power of Working Machinery—Especially Paper Cutters.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Herman T. C. Kraus, C. E.

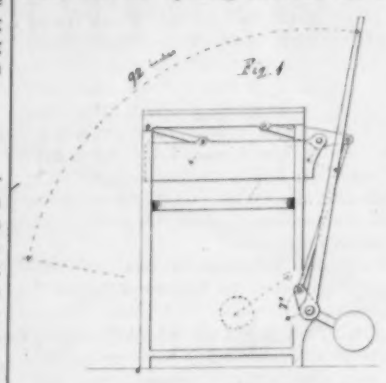
Every working machine performs a certain duty, either changing the condition of the material, separating parts, or simply conveying or transferring material, &c. All such work requires a certain amount of power, and this varies with the quantity and nature of the material. In calculating the power of a machine two principal factors are to be investigated, the part where the power is transmitted by a belt, gearing or otherwise, to the machine, and where this power is to be utilized to do the work. Both must theoretically be the same in power, for one end cannot absorb more power than the other supplies, and the intermediate parts, which really represent the machine, are only proportional to this effect.

To clearly illustrate this we will investigate a machine for cutting paper. In order to figure the proportion and power of a working machine we, in the first place, must know how much power it takes to cut a certain quantity of paper, as the basis of all calculations. By long experience it is found that it will take about 1,000 pounds at the cutting edge to cut one linear foot of ordinary writing paper a pile, say, at least an inch high. As is evident, this varies greatly with the nature of the paper and condition of the cutting edge, but we must take this as a standard for our calculations.

The so-called old-fashioned machine, represented by a single lever, and so highly esteemed, is excellent as it is to cut small piles at the time, but the demand for paper has so immensely increased that great quantities are to be cut in the shortest possible time and within the least space, and the apparatus must be handy for the operator and not awkward in appearance.

The first attempt to reduce and arrange the long straight lever to a machine of moderate size to meet the demand was undoubtedly with the so-called hand machine, represented in the market by different styles for different purposes. As simple as these may appear, they cannot be quilt at random and according to everybody's ideas. It requires long experience to arrange the details, such as the gauges, while the clamping power and the cutting must be closely investigated.

Figure 1 represents the lever machine, the nearest to the original straight lever cutter. The table top is about 40 inches from the floor, and the opening between the side



frames is from 24 to 30 inches; this gives 30 inches by 4¼ inches vertical opening or cutting space, from knife edge to table top. The long working lever is 60 inches from the centre of the shaft, and consequently swings in a circle of 120 inches, and describes about one-fourth part of the circumference, generally 92 inches, or 7.66 feet to one complete stroke of the knife.

The knife bar is suspended from the frame by two guide bars, consequently every point of the knife edge changes position in its movements, making the so-called drawing cut, which is necessary, else the cutting edge will be serrated by a vertical direction only.

With a cutter where the power to pull down the knife is from one side of the bar only, as shown with this figure, the knife bar in such a case and with a 30 inch cutter will swing 2½ inches horizontally to one side, which is rather too much for the purpose, and will increase the liability to heat the cutting edge by unnecessarily long contact with the paper. To some extent this can be reduced by very long guide bars, but this is not advisable so long as the pulling down of the knife bar is from one side only.

This long movement, in this case 5 inches from a point of the cutting edge to the table, diminishes the cutting power; that is, the proportion of distance described by the end of the operating lever and that of the knife edge in the same time is similar to the long and short end of a single lever.

The vertical distance of the knife from the table is, as said, 4¼ inches; but by the drawing cut it describes an arc of 5 inches direct; and so long as the end of the operating lever moves 92 inches in the same time we have 5 : 92 = 18.4 inches against 1 inch, as the proportion of the machine, and this regardless of intermediate parts, which obviously must be of such a design as to accomplish this proportion. To illustrate this in detail, in this case the distance described by the short and long part of the operating lever is 7 and 92 inches respectively; consequently the proportion is 13.14 to 1. This short end of the operating lever is connected, at the right hand side, by a rod to the prolonged guide bar to pull down the knife bar, and the distance traveled by this is in proportion to that of the short part of the operating lever as 5 : 7 = 1.4, consequently 13.4×1.4 = 18.4, the proportion of the machine.

Assuming that the operator can pull at the end of the lever equal to a force of 150 pounds, during the distance of 7.66 feet to accomplish one cut, then the work done is equal to 150×7.66 = 1,149 foot pounds, and this is conveyed by the intermediate parts to the knife bar and transformed into less motion with more actual pressure, and explains that what is lost in motion is in proportion gained in actual pressure, consequently (5 inches in feet) 0.416 : 1149 = 2764 pounds actual cutting pressure, or 2.5 : 2764 = 1105.6 pounds to one linear foot at the cutting edge.

The same result is attained by multiplying the power or weight applied at the end of the operating lever with the proportion of the machine, 18.4×150 = 2760 pounds pressure.

Taking into consideration and deducting the power lost by hindrance in the attempt to do the work, we can say that it takes 1,000 pounds cutting pressure to cut one linear foot of paper—that is, with a fairly sharp knife—although with a dull knife and a paper very hard to cut three men will be needed to push down the lever, and this by jerks. This is not fair play, but the machine must be constructed to meet such treatment.

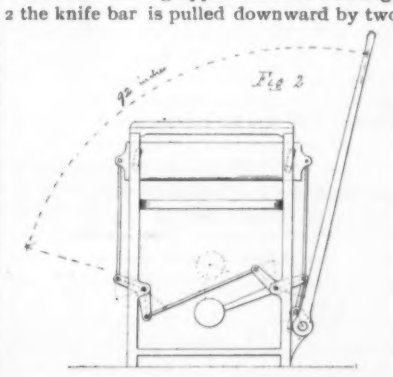
Some people conclude that only half of the theoretical power is available. This is all nonsense, for by many investigations in this direction it has been ascertained that the average loss is about from 8 to 10 per cent., providing the cutter is well made and arranged; but this again varies with the paper, and also with the state of cutting edge and, according to this, often with every cut.

To meet the demand it is advisable to have a surplus of power, so that the operator will not annoy neighbors for assistance in doing a certain class of work.

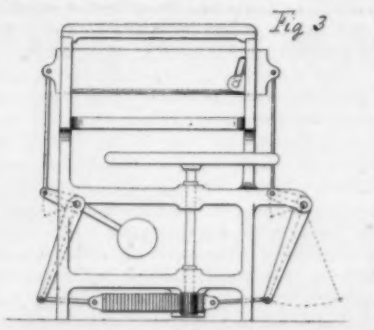
To construct a single machine with the utmost of power is not so easy a task. The length of the operating lever is approved by practical experience, and is about 60 inches long, and swings the distance of about 92 inches in order to make a cut. If by close management this is reduced a few inches, only one-eighteenth part less at the knife edge, there is certainly not much of a gain. The reduction must be principally with the distance traveled by the knife edge —similar to the difference between the long and short part of the lever, because if this short part can actually be shortened only a little it is more of a gain than many inches at the long end.

The two following examples illustrate how this may be attained, although it is necessary to construct parts in such a manner, at about the same actual expense, to enable it to compete with others in the market, for everything sold in the paper cutter line must be of the utmost excellence for doing work, but also cheap.

With the cutting apparatus shown in Fig. 2 the knife bar is pulled downward by two



straight side rods, one at each end, to which equal power is applied by one operating lever, the same as with Fig. 1. Bell cranks, below the table, and one at each side, are pivoted to the frame, and hinged at one end to the connecting rods to the knife bar, and at the other end, and at the right hand side, to the short end of the operating lever. The side motion of the knife bar is five-eighths of an inch, and is accomplished by a roller fastened to the knife bar, and which moves freely in a slot in the frame. By this little side motion the distance is almost and can be considered the same as the vertical distance of the knife to the table; consequently the gain over Fig. 1—everything else being the same—is 4.25 : 92 = 21.41 inches to 1 inch, as the proportion of the machine; therefore 0.350 : 1149 = 3283, the actual pressure at the knife edge, and for every linear foot 25 : 3283 = 1313.2 pounds. The side connecting rods and bell cranks can be made of malleable iron, or cast steel castings, ribbed in I shape. They are sufficiently strong, and will last as long as anything else.



To the shaft of the horizontal hand wheel (Fig. 3) is fastened a pinion, which actuates a rack, at each end of which is hinged a connecting rod operating crank levers, one end of which actuates, through connecting rods, the knife bar. The hand wheel can be of 30 inches diameter, and arranged in some suitable position under the table. The pinion is 3 inches in diameter, and of steel, and the long and short sides of the crank lever are in the proportion of 1 to 3. The circumference of the wheel is 94.24 inches, and it needs 1.34 revolutions of the pinion to move the rack, also the long end of the crank lever, 12.75 inches; consequently the proportions of the machine 4.25 : 126.2=29.7 inches to one, and 10.52×150 = 1578 foot pounds. Assuming that at the circumference of the hand wheel 150 pounds are applied, then we have 0.350 : 1578 = 4509 pounds actual pressure or cutting power at the knife, or 2.5 : 4509 = 1403.2 to each linear foot of cutting edge.

To compare the proportions of the working parts, which are found in the above detail dimensions, we have also:

$\frac{15 \times 12.75}{1.5 \times 4.25} = \frac{201.25}{0.375} = 30$ times to 1 the proportion of the machine.

The metal of the table surface is five-sixteenths of an inch thick, but it is strengthened by ribs an inch and a half deep. The table must rest firmly upon its bearings, especially upon the top of the cross tie, which connects both side frames. The principal bearing must be under the slot for the cutting stick, and the metal below it at least 2 inches or more, and of sufficient width to apply a few tap bolts, in order to secure that part of the table to the cross tie; else it is liable to spring with every cut if not well fitted. Only one cross tie is necessary, but in the right place, and, as said, well fitted to the sides and table. Tie rods ought to be as far apart and as near to the floor as convenient. To give a machine a good appearance by a fancy frame, &c., requires well trained, artistic ability to represent something; but it is better for the machine man to design his machine as plain as possible, and with easy, round forms, not sharp corners, or ribs without filling, &c., which all looks poor and cheap.

The counterweights shown with this figure can be arranged in different ways, but should be as direct as possible. The rack shown in Fig. 3 can be as well set in a vertical position, with the hand wheel at the side.

(To be continued.)

Plating Articles.

The middle agent between paper ware to be plated and the plating material acts as a glue, fastening the two together.

Simultaneous with the entrance of the material through a pipe, the ingredients in cylinders pass down through a pipe and into a main cylinder or dip tank. Here is where all preparations concentrate. It takes an hour or so for the tank to fill. Steam pipes keep it heated. The condition of the contents and the depth of the liquor are indicated on the gauges. When the tank is two-thirds full, a neck piece is removed and a basket containing ten or twelve dozen of ware is lowered by means of rope and tackle. The basket is made of wood so arranged that several dozen pieces of ware can be dipped. The basket is allowed to stay in the liquor several minutes, when it is withdrawn. All this time new liquor is entering the main tank and the old is running slowly through a partly opened valve, thus keeping the contents fresh Sometimes two or more baths are needed to effect a good coating of the silvery material; sometimes only one.

Every manufacturer and steam user should study the characteristics of his engineer. Men who " pull the throttle " are human, and if some attention is given to what kind of treatment will best suit their case it will well repay the value of the time spent in doing it.

INFRINGEMENT NOTICE!

Our attention having been called to the fact that certain persons are infringing certain Letters Patent granted to William F. Edwards, bearing date January 12, 1886, No. 334,072; also patent granted Boyne & Thompson, bearing date October 8, 1889, No. 412, 259, said Letters Patent covering improvements on both Fourdrinier and cylinder paper making machines. This infringement in part consists in couching from wire to felt and from first to second felt and dryers without handling. These patents are now owned by the undersigned, and this is to notify all persons, whether manufacturers or users of same, that any infringements on said patents will be prosecuted to the full extent of the law.

Paper Machine Improvement Co.
Office: Newark, N. J.

Paper Decorated in Paper Pulps.

Paper or Board at time of manufacture can be **ornamented** or **lettered** in **paper pulp** by the use of Patent Decorating Wire Moulds on any cylinder, Fourdrinier or Harper machine without material changes, and in any number of colored pulps simultaneously, on one or both sides. Adapted to decorating wood, straw, leather or manilla board; book, news, tissue, writing, envelope, blotting, carpet and wrapping papers. Proprietary terms can be obtained in United States, Canada or Europe.

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ALUM! **THE MERRIMAC POROUS ALUM** is unsurpassed for **purity** and good results
All other grades of Alum for paper makers' use and for filtering purposes. Address
MERRIMAC CHEMICAL CO., 13 Pearl Street, Boston.

G. RAU, IMPORTER, TIMES BUILDING, NEW YORK.
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Linen and Cotton Rags.

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2 & 4 Stone St., New York.
SULPHUR.
The most important Pulp and Paper Manufacturers in the United States constantly supplied by direct importation.
PURITY AND QUALITY OF SULPHUR GUARANTEED. *Sole Agent for the United States for Greek Magnesite.*

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Nos. 62, 64 & 66 NORTH SECOND STREET, BROOKLYN, E. D., NEW YORK,
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IMPORTERS AND PACKERS OF **PAPER STOCK,**
AND DEALERS IN PAPER MAKERS' SUPPLIES.
Special attention called to Our Own Packing.

Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED MARCH 6, 1896.

An. Colors..	1,030	$76,749	Paper	1,490	$39,107
Alum	2	25	Steel Pens..	7	1,945
Alum's Cake	—	—	Stationery .	9	979
Bl. Powders	592	10,636	Slate Pencil	130	601
Soda Ash...	2,197	8,663	Clay	—	538
Soda, Caus.	161	2,333	J'te B'ts,&c.	16,880	54,106
Soda, Sal....	—	—	P.Hangings	48	1,778
Soda, Hypo.	—	—	Pap'r Stock	3,481	31,532
Ultramarine	212	4,975	Terra Alba	—	—
Books.....	291	28,493	Waste.....	106	13,887
Newspapers	228	10,666	Wood Pulp	870	5,408
Engravings.	54	2,517			
Ink.....	15	435			
Lead Pencils	12	1,310	Totals....	27,815	296,683

Imports General Merchandise for the week ended March 6, 1896..... $6,287,704

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO MARCH 11, 1896.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Antwerp.....	575	...	283	....	2,047
Bremen.....	200	....	....	...	....
Bordeaux.....	1,043	....	....	....	....
Bristol.....	....	...	....	....	1,356
Calcutta.....	....	....	....	....	1,537
Copenhagen..	160	....	250	....	38
Dundee.....	....	....	....	....	778
Genoa.....	425	....	....	....	....
Glasgow.....	115	503	....	....	239
Gothenburg..	....	....	295	....	659
Hamburg.....	1,530	51	318	....	280
Havre.....	....	....	....	....	302
Hull.....	1,724	....	403	....	2,941
Kobe.....	....	....	....	....	5
Leith.....	....	....	....	....	111
Leghorn.....	425	....	....	....	....
Liverpool.....	511	75	....	....	2,182
London.....	1,502	1,192	....	....	1,127
Marseilles....	....	....	....	....	1,153
Nassau.....	17	....	....	....	....
Rotterdam....	1,033	....	353	....	964
Stettin	3,183	....	25	....	456
Valparaiso....	9	....	....	....	....

NEW YORK IMPORTS.

FROM MARCH 4 TO MARCH 11, 1896.

Paper Stock.

Atterbury Brothers, St. Enoch, Antwerp, 42 bs. rags.

S. Goldman, Norge, Copenhagen, 200 tons chemical fibre.

F. Bertuch & Co., by same, 20 tons chemical fibre.

Devoy Brothers, Carthaginian, Glasgow, 172 bs. paper.

J. W. Mason & Co., Rialto, Gothenburg, 190 bs. manillas.

Horace Dutton & Co., by same, 305 bs. manillas.

G. Rau, by same, 143 tons chemical fibre.

F. Bertuch & Co., Persia, Hamburg, 75 tons chemical fibre.

T. S. Todd & Co., Buffalo, Hull, 250 bs. rags.

F. Bertuch & Co., by same, 65 tons chemical fibre.

Castle & Gottheil, Colorado, Hull, 60 tons chemical fibre.

J. W. Mason & Co., Cevic, Liverpool, 136 bs. manillas.

Perkins, Goodwin & Co., by same, 48 bs. manillas.

Train, Smith & Co., by same, 15 bs. rags, 148 bs. manillas.

Jessup & Moore Paper Company, Alsatia, Leghorn, 150 bs. rags.

Atterbury Brothers, Mississippi, London, 20 bs. rags.

Castle & Gottheil, by same, 30 bs. rags.

Train, Smith & Co., Greece, London, 99 bs. rags.

E. C. Ryder, by same, 382 bs. bagging.

Castle & Gottheil, by same, 128 bs. papers.

J. R. Walker & Co., by same, 67 bs. paper.

Merchants' Dispatch, by same, 84 bs. papers.

Paper.

G. Borgfeldt & Co., Mississippi, London, 4 cs.

A. Bossowits, by same, 3 cs.

F. Beck & Co., by same, 3 cs. hangings.

John Hunter, Buffalo, Hull, 6 cs.

Marcus Ward & Co., by same, 6 cs.

Samuel Barling, Majestic, Liverpool, 13 cs.

W. Demuth & Co., by same, 34 cs.

R. W. Carroll, Carthaginian, Glasgow, 5 cs.

Geo. J. Kraft, Lucania, Liverpool, 8 cs.

G. W. Sheldon & Co., by same, 3 cs.

B. & O. Meyer, by same, 12 cs.

C. D. Stone & Co., by same, 9 cs.

T. D. Richards & Co., by same, 5 cs.

G. W. Sheldon & Co., St. Louis, London, 19 cs.

A. E. Bulkley, by same, 53 cs. hangings.

Hensel, Bruckmann & Lorbacher, Italia, Hamburg, 12 cs.

Hug & Bossowitz, by same, 3 cs.

E. Fougera & Co., La Gascogne, Havre, 81 cs.

J. C. Drucklieb & Co., by same, 45 cs.

D. Weill, by same, 3 cs.

Robert Graves & Co., by same, 2 cs. hangings.

Favor, Ruhl & Co., by same, 3 cs.

L. De Jonge & Co., Amsterdam, Rotterdam, 35 cs.

Eagle Paper Company, by same, 38 cs.

Gane Brothers, by same, 1 cs.

Miller, Sloan & Co., by same, 5 cs.

E. Majert & Co., by same, 15 cs. hangings.

L. De Jonge & Co., by same, 16 cs.

BOSTON IMPORTS.

FROM MARCH 5 TO MARCH 11, 1896, INCLUSIVE.

Paper, &c.

Louis Wolf & Co., Ascania, Hamburg, 2 cs. albums.

Order, by same, 12 cs. paper.

Chas. D. Brown & Co., Virginian, London, 3 cs. paper.

Wm. Guild & Co., Norseman, Liverpool, 5 bs. periodicals.

Paper Stock.

Train, Smith & Co., Virginian, London, 626 bs. rags, 263 bs. waste papers, 31 bs. manillas.

W. F. Corne, by same, 54 bs. rags.

Horace Dutton & Co., by same, 223 bs. rags, 237 coils manillas.

E. Butterworth & Co., by same, 160 bs. flax waste.

Wheelwright Paper Company, by same, 180 bs. waste paper.

Crocker, Burbank & Co., by same, 128 bs. waste paper.

C. P. Sumner & Co., by same, 51 bs. waste paper.

F. Salomon, Ascania, Hamburg, 41 bs. rags.

Horace Dutton & Co., British Crown, London, 169 bs. rags.

E. Butterworth & Co., Norseman, Liverpool, 144 bs. manillas.

Wood Fibre.

Fred. Bertuch & Co., Ascania, Hamburg, 400 bs.

Castle & Gottheil, by same, 200 bs.

Bleaching Powder.

J. L. & D. S. Riker, Norseman, Liverpool, 128 cks.

Reed, Holladay & Son, by same, 48 cks.

Soda Ash.

Warren & Co., Norseman, Liverpool, 34 cks.

Soda Crystals.

Warren & Co., Norseman, Liverpool, 140 bbls.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED MARCH 7, 1896.

Paper.

Chas. Beck Paper Company, Switzerland, Antwerp, 18 cs.

Soda Crystals.

J. I. Keefe, Waesland, Liverpool, 457 bbls.

Bleaching Powder.

Order, Switzerland, Antwerp, 129 bbls.

Sulphur.

Order, Dora, Girgenti, 900 tons.

EXPORTS of Paper, &c., from New York for the Week Ended March 10, 1896.

BOOKS, to Colombia, 2 cs.; Argentine Republic, 2 cs.; Berlin, 4 cs.; British Guiana, 8 cs.; Bremen, 2 cs.; British East Indies, 7 cs.; Brazil, 1 cs.; British possessions in Africa, 2 cs.; Cuba, 4 cs.; Chili, 1 cs.; Central America, 37 cs.; Danish West Indies, 1 cs.; Ecuador, 1 cs.; Hayti, 1 pkg.; Hamburg, 5 cs.; Havre, 33 cs.; Nuremberg, 1 cs.; Liverpool, 5 cs.; Newfoundland, 11 cs.

PAPER, to Uruguay, 21 pkgs.; Colombia, 66 pkgs.; Liverpool, 16 cs.; London, 495 cs.; Peru, 3 pkgs.; Argentine Republic, 26 pkgs.; Cuba, 13 pkgs.; Bremerhaven, 17 cs.; Chili, 453 pkgs.; British Honduras, 19 pkgs.; Dutch Guiana, 6 pkgs.; British Australasia, 318 pkgs.; Hamburg, 12 cs., 136 pkgs.; British West Indies, 349 pkgs.; Havre, 3 cs.; Bolivia, 10 pkgs.; Danish West Indies, 48 pkgs.; Central America, 139 pkgs.; French West Indies, 7 pkgs.; Dutch West Indies, 4 pkgs.; Hayti, 21 pkgs.; Mexico, 165 pkgs.; Newfoundland, 21 cs.; Porto Rico, 49 pkgs.; Venezuela, 14 pkgs.

STATIONERY, to Antwerp, 1 cs.; Cuba, 6 pkgs.; Ecuador, 3 cs.; Amsterdam, 21 cs.; Central America, 25 pkgs.; Argentine Republic, 17 cs.; Dutch West Indies, 2 cs.; British Honduras, 2 cs.; Danish West Indies, 4 cs.; British East Indies, 1 cs.; Hamburg, 2 cs.; British Australasia, 5 cs.; Liverpool, 49 cs.; British West Indies, 16 pkgs.; London, 3 pkgs.; Brazil, 7 cs.; London, 52 cs., Mexico, 30 cs.; Chili, 15 cs.; Moscow, 6 cs.; Newfoundland, 11 pkgs.; Colombia, 7 pkgs.; Venezuela, 2 cs.

SANDPAPER, to Bolivia, 13 bs.; Hamburg, 2 cs.; Chili, 15 pkgs.; London, 93 bdls.; Central America, 1 cs.; Mexico, 1 cs., 9 pkgs.; Uruguay, 2 bs.; Southampton, 2 pkgs.; Venezuela, 1 bale; Glasgow, 5 cs.

TWINE, to Colombia, 11 bs.; British possessions in Africa, 1 cs.; Ecuador, 1 bale; British West Indies, 6 bs.; Newfoundland, 11 bs.; Dutch West Indies, 12 bbls.; Uruguay, 2 bs.; Danish West Indies, 2 bs.; Venezuela, 8 bs.

PAPER BOXES, cases, to Chili, 1.

PLAYING CARDS, cases, to British possessions in Africa, 2; London, 1; British West Indies, 3; Southampton, 4; Chili, 1; Central America, 2.

PAPER BAGS, bales, to British Australasia, 30.

WALL PAPER, to Belfast, 6 cs.; London, 3 cs.; Manchester, 1 cs.; Chili, 19 cs.; Mexico, 20 bs.; Nova Scotia, 39 pkgs.; Southampton, 3 cs.

LABELS, cases, to Mexico, 1.

STRAWBOARD, cases, to Mexico, 6.

SHOW CARDS, cases, to London, 3; British Australasia, 1.

PAPER FIBRE, cases, to Havre, 20.

BRISTOL BOARD, cases, to Mexico, 6.

AGGREGATES AND VALUES.

Wood Pulp, bdls.....	2	$236
Wood Pulp, rolls.....	—	—
Cotton Waste, bs.....	650	13,130
Rags, bs.....	80	2,165
Paper, reams.....	—	—
Paper, pkgs.....	1,975	17,311
Paper, cases.....	602	7,449
Books, cases.....	149	10,868
Books, pkgs.....	1	10
Stationery, cases.....	212	9,201
Stationery, pkgs.....	62	1,567
Rosin, bbls.....	10,837	33,300
Totals.....	14,51	$95,230

Exports General Merchandise for the week ended March 10, 1896..... $8,012,827

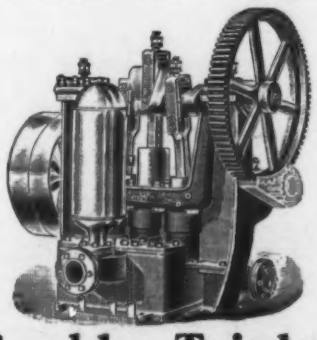
Bank Note Paper.

A German physicist, Von Bilbra, has proposed to the Bavarian Government to manufacture bank notes on the following principle: If a sheet of paper is dipped into a mixture of different coloring substances, each color will infiltrate the paper with variable speed, and the paper will present a series of superposed bands, each of which will have a well marked color and width. It would then suffice to keep the mixture of colors secret to prevent all fraud.

For example, a drop of the coloring mixture might be let fall on the centre of a piece of paper, to form a certain number of concentric rings, each of a fixed thickness.

—Bulletin des Fabricants de Papier.

"Efficient Power Pumps."



Goulds Triplex Power Pump

for Hydraulic Grinders

was designed and built especially for this work. That it is in

Daily Use

in the majority of ground wood mills in this country is the best evidence of its *Superiority* and adaptability to this class of work.

Our Catalog "Efficient Power Pumps." has a section devoted to pumps for paper makers.

THE GOULDS MFG. CO.,

Works and Main Offices:

Seneca Falls, N. Y., U. S. A.

Warerooms—16 Murray St., New York.

New England Office, 336 Congress St., Boston.

GENERAL BRANCHES AND AGENCIES:

The Gould Company, 22 N. Canal St., Chicago, Ill.
L. M. Bates 321 Vine St., Philadelphia, Pa.
N.O. Nelson Mfg. Co., 8th & St. Charles Sts., St. Louis, Mo.
Woodin & Little, 312-314 Market St., San Francisco, Cal.

CHRISTIANA MACHINE CO.,

Christiana, Pa.,

MANUFACTURERS OF

THE BALANCED GATE

Turbine Wheel.

Suitable for Light or Heavy Service.

Globe Outer-Cases and Special Wrought or Cast Iron Flumes,

SUITABLE FOR ANY SITUATION.

GEARING of all kinds, SHAFTING, PULLEYS and everything required for a complete POWER PLANT.

Satisfaction Guaranteed. Designs and Estimates furnished on application. Send for Catalogue.

TRAIN, SMITH & CO.,

IMPORTERS OF AND DEALERS IN

—ALL DESCRIPTIONS OF—

Paper Makers' Supplies,

24 FEDERAL STREET, BOSTON.

BRANCH OFFICES: 140 NASSAU STREET, NEW YORK. 14, 16, 18 & 20 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.,

WHOLESALE DEALERS IN AND PACKERS OF

Woolen Rags and Paper Makers' Supplies,

86, 88 & 90 COVE ST., BOSTON, MASS.

WOOLEN RAGS GRADED IN COLORS AND QUALITY.
OUR SPECIALTIES: "EXCELSIOR" AND "STAR" PACKINGS.

ESTABLISHED 1855.

DARMSTADT & SCOTT,

— IMPORTERS AND PACKERS OF —

PAPER STOCK.

Offices: 257 Front Street. Packing House: 312 Water Street, New York.

☞ SPECIAL ATTENTION CALLED TO OUR OWN PACKING.

F. BREDT & CO.,

No. 194 Fulton Street, New York City, U. S. A.

SOLE AGENTS FOR

JOSEPH PORRITT & SONS'

ENGLISH FELTINGS.

TRADE MARK.

ALSO IMPORTERS AND DEALERS IN

MARINE BLUE (Aniline) for News Paper Mills,

Jacketing, Roll Cloth, Double Extra Canvas, Ultramarine Blue.

A. D. LITTLE, GRIFFIN & LITTLE, PAPER MILL CHEMIST,

Office and Laboratory: 103 Milk Street, Boston.

EXPERT IN THE SULPHITE PROCESS AND ALL CHEMICAL MATTERS PERTAINING TO THE MANUFACTURE OF PULP AND PAPER.

A. WERTHEIM & CO.,

HAMBURG, GERMANY,

Exporters of all Grades of Sulphite and Soda Pulps.

SIGMUND GOLDMAN, Agent for the United States and Canada,

BENNETT BUILDING, 99 NASSAU STREET, NEW YORK.

COCHRANE CHEMICAL CO.,

55 Kilby Street,

BOSTON, MASS.

Manufacturers of Alum.

Highest tests, free from iron, and all other grades used by paper makers.

Also manufacturers of ACETIC ACID, SULPHURIC ACID and other chemicals

THE LA TOURRETTE MACHINE CO.,

MIDDLETOWN, OHIO,

Manufacturers of the celebrated Buckeye Rag Cutters, Automatic Paper Cutters, Paper Bag Machines. Paper Calenders of all kinds accurately ground by the Poole process.

ROLL TOP DESKS.

OUR NEW LINE OF OFFICE FURNITURE LEADS ANYTHING EVER SHOWN IN BOSTON, BOTH IN QUALITY AND PRICE.

W. B. BADGER & CO., 180 Portland St., Boston.

PAPER PLUGS

A SPECIALTY.

THE RICE NOVELTY WORKS, A. RICE, PROPRIETOR, MANUFACTURERS OF PUMP FIXTURES. ALL KINDS OF NOVELTIES. WINCHESTER, INDIANA.

CASTLE & GOTTHEIL,

— IMPORTERS OF —

Sulphite and Soda Pulps,

LINEN AND COTTON RAGS,

JUTE STOCKS, SIZING, &c.

TIMES BUILDING, 41 PARK ROW. NEW YORK.

ROOMS 188, 189 & 190.

The Paper Trade Journal.

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American Bookmaker, Monthly, . . .	2.00
American Mail and Export Journal, separate editions, English and Spanish (EL CORREO AMERICANO Y DIARIO DE EXPORTACIÓN), Monthly, . . .	3.00
Lockwood's Directory of the Paper, Stationery and Allied Trades, Annually, ...	2.00

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ALSO, *Per Copy.*

American Dictionary of Printing and Bookmaking, royal octavo, half bound, 600 pages; net price, delivered, $12.00
Chemistry of Paper Making, octavo, cloth, 532 pages; net, price delivered, . 5.00

LOCKWOOD PRESS BUILDING.

HOWARD LOCKWOOD & CO.

Publishers,

No. 143 Bleecker Street, Corner West Broadway, New York.

WILLIAM PINKNEY HAMILTON, Managing Partner.

Telephone—209 Spring.

Cable Address—Catchow, New York.

BRANCH OFFICES:

Western Office—R. B. DUVALL, General Manager, 78 METROPOLITAN BLOCK, CHICAGO.

Boston Office—A. L. DELESDERNIER, General Manager, 64 FEDERAL STREET, BOSTON, Mass.

London Office—ARTHUR MORRIS, General Manager, No. 1 MITRE COURT, FLEET STREET, LONDON, England.

NEW YORK: SATURDAY, MARCH 14, 1896.

SPECIAL NOTICE.

Part 4 of "Hofmann's Treatise on Paper Making" has been delivered to subscribers. Thus far we have published 288 pages; each part consists of seventy-two body pages and cover. We translate the work from German into English, and print it with good ink, in clear type, on first-class paper, which will stand the test of time. Great care is taken in printing and locating the many illustrations. "Hofmann's Treatise" ought to be in the library or office of every paper manufacturer, and also owned by every superintendent and paper maker who is ambitious to be fully posted on his trade. The price is $1 in advance for each part. If your order has not already been given send $4 and the four parts will be sent to you; or you can send $5 or $10, and as many parts will be forwarded in due course as there are dollars in your remittance.

HOWARD LOCKWOOD & CO.

THE news of the failure of a prominent paper making concern in New England this week is a surprise and shock to all in the paper trade. The causes which led to this disaster will, we presume, be fully set forth at the meeting of creditors to-day. It may be—we do not say that it will be—shown that the concern referred to has put paper on the market at less than the cost of production. No mill can pursue such a plan and expect to tide over a season of business depression, except by some extraordinary chance which rarely obtains in business transactions. This event may lead to some clearing up of the business sky by conveying a moral which will be heeded.

THE fire loss of the country took an agreeable drop of $1,309,900 during February, the figures for January being $11,040,000 and those for February $9,730,100. The decrease from February, 1895, is $2,630,100. In a detailed classification the magnitude of the various losses is as follows: In eighty-one fires the losses were between $10,000 and $20,000; in forty-five they were from $20,000 to $30,000; in twenty-eight, from $30,000 to $50,000; in twenty-six, from $50,000 to $75,000; in eight, from $75,000 to $100,000; in eleven, from $100,000 to $200,000, and in three from $200,000 to $1,400,000. Taken altogether the figures for the month last past are very gratifying, and it is to be hoped this improvement will progress right along.

THE unfavorable weather which has prevailed for a week or two has laid a heavy embargo on the manufacturing industries of Northern New York and New England. Extensive and disastrous floods have resulted, and as a consequence a number of mills have been disabled and their workers for the time thrown out of employment. The only industry which seems likely to profit by the work of the floods is that of structural iron, as the amount of bridge building which must be done as speedily as possible in order to restore communication between the different sections of the washed out districts seems to point to a boom in that branch of the iron industry. It will soon be in order to again ask what part forest denudation plays in these annually recurring freshets. There is a bill before the New York Legislature which contemplates large additions to the Adirondack forest preserve, and more effective protection for the same; but, as usual, it lags behind measures of less practical importance, although of larger political possibilities.

WE think that the Loud bill, which proposes to change the classification, &c., of second-class mail matter, is not a measure adapted to the needs of the postal service or to public requirements. In fact, it is another instance of trying to save at the spigot while the bunghole is the outlet of waste. The Government itself is one of the chief causes of deficiency in postal revenues. It sends by mail furniture, arms, specie and any quantity of matter which ought to be put under the regular freight schedules, and then asks for appropriations to cover the deficit thus accruing. The Post Office deficiency, after all, is not so great a matter. Compared with value received by the people at large, it is a mere bagatelle for legislative consideration. There is no reason why the circulation of books and newspapers should be circumscribed to make up for this loss. Should the Loud bill become a law we believe that public sentiment would be excited to vigorous protest. The people at large have not had the chance to realize what it means. Those whose subsistence is threatened should be advised of its intent. Protests should be sent to representatives in Congress, so that they may be apprised of the sentiment of their constituencies.

THE main features of the bill to create a Department of Commerce and Manufactures, which was introduced in the United States Senate on the 11th inst., are as follows: "It enlarges the Cabinet by the appointment of an additional Secretary, and takes from the State Department a portion of its duties and from the Treasury Department all of its present functions that relate entirely to commerce, its protection and development, such as the life saving service, lighthouse board, marine hospital service, steamboat inspection, bureau of navigation, coast and geodetic survey, bureau of statistics, &c. The Bureau of Statistics of the State Department is merged with the same bureau in the Treasury Department and both bureaus are placed under the new department. Consular officials and commercial agents are likewise transferred from the State to this proposed department." It is possible that such a department could be of immense assistance to the trade of the country, but the results which have followed the establishment of the Department of Agriculture do not give much encouragement to the hope that it will. One of the proposed reforms, however, commends itself; it is the bringing together of the duties of the consular service under one responsible head. Hitherto that service has had two masters, the State and Treasury departments, with the natural result of conflict of authority, any quantity of official red tape and a dilatory service.

METHODS of competition, rather than the fact of competition, have changed with the progress of the world. It is, however, hardly possible to realize that in the old, slow going, sure footed methods of trade which prevailed even no longer ago than the beginning of the century there was any real competition as we understand the term. If "the longest pole took the persimmons then" it certainly reaches farther and takes more now. Imagine a hustling business house sitting down patiently to wait a year for news of a venture in the China trade, or even three months for advices from London. Steam and electricity have made the business centres of the world touch elbows, and at the same time have awakened the old longing for supremacy which we interpret as competition. A well informed business man has no more hesitation about filling an order from Australia than one from the next block. It is in this wider view of business that competition becomes a pillar of national strength. It makes men more alert, bolder in action and broader in ideas, as well as keener and shrewder in the intuitive faculties of insight and foresight, readier to take risks and less easily subdued by misfortune. In fact, competition is, as an exchange suggests, the restless, invincible spirit of the old wars of conquest transferred to the less sanguinary paths of trade and industry, with steam and electricity as prods to action.

Watermarks.

BY DANDY.

Well, did you do St. Augustine?" was asked of a returned tourist. "No," was the reply. "It did me."

Drury is at it again. This time David celebrated the anniversary of his entrance, not into business, but into the world. In other words, he had a birthday, the exact number of which, however, history and rumor have both failed to record. His friends brought him presents and congratulations, and the genial D. M. now thinks that he would like to have a calendar whereby he can have more than the allotted number of natal days in a year.

That is always the way with a wire man!

That failure in Holyoke rather startled the boys, and some of them made very vigorous remarks as to the event. Somebody evidently has faith in the outcome, as he has purchased some claims at about 70 cents on the dollar. That somebody is another Holyoke mill owner, and it now remains to be seen what he will do with the claims.

"I don't know that marriage is a failure," said the stock man, "but I know I am wedded to this account much against my will and I propose to get a divorce if I can." "Why don't you get an attachment?" suggested a listener.

Some of the boys did get attachments, but up to date all the sheriff could get was $200, which goes to show that, while the mill paid its debts about as it pleased, it collected its accounts very sharply.

A prominent man in the pulp trade carries a cane which is equally good in fine or squally weather. When the sun shines he uses it as a cane. When it begins to rain he touches a spring in the silver handle, a little door is thrown open and he takes out the frame of an umbrella. Adjusting it on the cane, he takes from his pocket the silk cover, spreads it over the frame, secures it in place and goes along, the envy of everybody. Some day he is going to lose that combination, especially if he carries it over the country with him.

This new woman business is making headway without doubt, as witness the two following advertisements taken from a recent issue of an exchange:

NOTICE—My wife having left my bed and board, I warn all persons from selling her any goods on my account. Alfred Horner, Prospertown, N. J., February 8, 1896.

NOTICE.

I would inform the public in general, and Alfred Horner in particular, that his credit is in no danger of being offered for sale by me. And as for the bed and board he speaks of my leaving there is a mistake about that, for, from the unfortunate day we were married until now, he has never given me either, nor had he them to give. Therefore the matter is Gussie paddles her own canoe. MRS. GUSSIE HORNER.
PROSPERTOWN, N. J., Feb. 25, 1896.

A leading paper manufacturer is in training, and every morning a well-known professor of the fistic art puts the gloves on with him. The result is that the p. m. is getting rid of fat and putting on muscle, and anyone who wants an extra cash discount will get it in a way which will not reduce the size of the bill at all.

Changes, Removals and New Firms.

M. P. Stevens, publisher, Hillyard, Wash., has sold out.

The *Echo*, Rico, Col., has suspended publication.

W. A. Kemp has opened a wall paper store at Springfield, Mass.

Simpson & Lyall, printers, New York, have dissolved partnership.

J. W. Freeland, bookseller and stationer, Marion, Ohio, has sold out.

The *Long Island Cyclist*, Brooklyn, N. Y., is a new weekly paper.

Nelson Crews, bookseller and stationer, Hillsboro, Tex., has sold out.

The *Tribune*, La Jara, Col., is a new paper published by C. W. Wilder.

J. Harry Hobson has opened a book and stationery store at Portland, Conn.

William D. Spyres, bookseller and stationer, Mt. Grove, Mo., has sold out.

John O. Sax, stationer, Livingston, Mon., has been succeeded by Sax & McCue.

Simpson & Lyall, printers, publishers and binders, New York city, have been succeeded by the Victor Press.

The *Times-Herald* Printing Company, Dallas, Tex., has been incorporated by John F. Elliott and others. Capital stock, $25,000.

The Progressive Paper Box Company, St. Louis, Mo., has been incorporated by Albert Solomon and others. Capital stock, $7,000.

The Augusta Publishing Company, Augusta, Ga., has been incorporated by William Dunbar and others. Capital stock, $100,000.

The Firm Foundation Publishing Company, Austin, Tex., has been incorporated, with a capital stock of $10,099, by J. W. Jackson and others.

The American Biographical Cyclopedia Association, publisher, Durham, N. C., has been incorporated by Solomon Pool and others. Capital stock, $10,000.

The Chasmar Press, New York, has been incorporated to do a printing and engraving business. Capital, $30,000. Directors, A E. Chasmar, of South Norwalk, Conn., and P. A. Strong, of New York.

The Empire Lithographing Company, New York, has been incorporated. Capital, $2,000; and directors, M. E. Boas and Morris Baer, of New York, and Ray Karpas, of Brooklyn, N. Y.

Horace G. Polhemus and Matthew J. Tobin have purchased the plant of the Excelsior Press Rooms and Publishing Company, 11 Frankfort street, New York, where they will continue the business of that concern.

The Press Fashion Company, of New York city, has been incorporated. Capital, $50,000. Directors, Charles S. Faulkner, Harry C. Faulkner, and W. T. Perkins, of New York city.

Martin Scheeler, Sr., has retired from the firm of Scheeler & Sons, manufacturers of wire cloth, wire goods, wire work and artistic metal work, Buffalo, N. Y. The business will be continued by Philip and Martin Scheeler, Jr.

Herman Reif, bookseller, Detroit, Mich., recently reported to have sold out, has transferred his business to his son, Oscar Reif, and to George Schwenk, who will continue under the style of Reif & Schwenk.

The *Helpful Thoughts* Publishing Company, of New York city, has been incorporated to publish a journal devoted to religion, schools and Judaism. Capital, $5,000; and directors, Rebekah Stout, Julia Richmond and William C. Popper, of New York city.

J. R. Corder, bookseller and newsdealer, Mattoon, Ill., has retired from business. His periodical trade has been absorbed by Richardson Brothers, and the book, stationery and fancy goods departments will be continued by L. T. Holmes at Mr. Corder's old quarters, 14 West Broadway.

Barnard's Sons, dealers in paper hangings, &c., Utica, N. Y., are selling out.

J. W. Harvey, publisher, Monrovia, Cal., has been succeeded by Harvey & Monroe.

The *Local Mail*, Denver, Col., is a new monthly journal devoted to postal matters.

A. J. Stacey, publisher, Newton, Kan., has been succeeded by P. H. Knowlton & Co.

The Fravin-Buell Company, lithographer, Chicago, Ill., has dissolved partnership.

Thompson Brothers, publishers, Lafayette, Ind., have been succeeded by J. H. Lether.

The *Athletic Life* Publishing Company, Limited, Toronto, Ont., has been incorporated.

J. C. Hobbs, stationer, &c., Deepwater, Mo., has sold out to J. M. Marmaduke, of Bronaugh.

Harting & Carleton, booksellers and stationers, Des Moines, Ia., have dissolved partnership.

W. W. Reilly & Co. have opened a book, stationery, wall paper, &c., store at Portsmouth, Ohio.

The *West Creek Times*, West Creek, Col., is a new paper published by the Wilson Brothers.

Geo. S. Kleckner, bookseller, stationer, &c., Freeport, Ill., has been succeeded by J. Willard Smith.

M. K. Stern has been admitted to the business of the Nashville Paper Company, Nashville, Tenn.

W. D. Mathews & Son, publishers, Stuttgart, Ark., have been succeeded by Mathews & Blanchard.

Chas. D. Middleton, publisher of the *Star*, Warrensburg, Mo., has been succeeded by C. D. Middleton & Co.

O. C. Kemp, of Kemp & Edsall, booksellers, stationers, &c., Greenville, Mich., has sold his interest to E. A. Kemp.

James Bain & Son, booksellers and stationer, Toronto, Ont., have been succeeded by the Bain Book and Stationery Company.

O. S. Chamberlin & Co., wholesale dealers in building paper, Chicago, Ill., have been succeeded by the N. J. Fitch Paper Company.

The Dowagiac Bookbindery, Dowagiac, Mich., has been purchased by J. A. Webster, who will add more machinery to his plant.

B. Frank Lane, stationer, Long Branch N. J., has sold out to W. E. Allstrom and Frank Conrow, the purchase price being, it is said, $1,400.

The Berkshire Typewriter Paper Company, Pittsfield, Mass., has been organized. Capital stock, $6,000; and directors, A. W. Watson, president; J. E. Colton, treasurer, and W. A. Pike.

The *Spectator* and the *Reporter*, Rapid City, Man., have been consolidated and will be continued by George S. Perry, of the former paper.

The *South Side Observer* Company, of Rockville Centre, Queens County, has been incorporated to publish a newspaper and conduct a printing business. Capital, $6,000; and directors, C. L. Wallace, S. S. Smith and George Wallace, of Rockville Centre.

The Martin Press, New York, has been incorporated to do a general printing business. Capital, $50,000; and directors, Mamie Martin, of Preston, Canada; Karl M. Schleuter, Ferdinand Schleuter, Jr., and Paul E. Mitchell, of Brooklyn, and Henry J. House, of New York.

Failures.

The mortgagee is in possession of the *Sentinel*, Manti, Utah.

D. W. Lerch, printer, Bradford, Pa., has been closed out by the sheriff.

The Stone & Locke Engraving and Printing Company, Denver, Col., has made an assignment.

A meeting of the creditors of H. B. Nims & Co., stationers, Troy, N. Y., is to be held at the rooms of the Stationers' Board of Trade on Monday next at 3 P. M.

At a meeting of creditors of the Presbyterian Publishing Company, Toronto, Ont., a statement presented showed liabilities of $17,900 and preferred claims of $1,850. The assets are: Subscriptions, $8,500; machinery, $15,000; merchandise, &c., $300; stock, $3,000, valued at about $630.

H. M. Penfold & Co., manufacturers of paper boxes, &c., Montreal, Que., have assigned on demand of Machin & Koening, London, England. Liabilities, about $17,000; assets, $10,000. The principal creditors are: Hobbs Manufacturing Company, Worcester, Mass. (secured), $2,613; Jesse Joseph, $1,345; J. Ford & Co., Portneuf, Que., $2,333; J. Penfold, $5,047; Mrs. Penfold, $502.

The Albion Paper Company.

The Albion Paper Company, Holyoke, Mass., one of the largest and, until now, always considered one of the strongest manufacturing concerns in that city, is financially embarrassed, with liabilities reaching from $500,000 to $700,000. The news of this failure came like a thunderbolt from a clear sky to the people of the "Paper City" on Monday morning, and at first the rumors were discredited, but during Monday afternoon it was learned that the company was unable to meet a number of outstanding claims and that it was really in serious trouble. It has been known for some time that the company was a large borrower, but its fine standing in financial circles and the fact that large dividends had been declared regularly put at rest all fears as to its ability to meet all claims against it.

The crisis came on Saturday night, March 7, and although all of the checks and notes due at that time were promptly met, it was fully understood by the managers that the limit had been reached, and that future notes coming due could not be taken care of. The Albion Paper Company has always been looked on as a model of its kind, and its credit has always been gilt edged; but there are several good reasons given for the failure, although the true facts will not be brought out until the creditors meet.

Since the announcement of this disaster the last report made to the State authorities in May showing the financial condition of the corporation has been the subject of much discussion. This report was as follows: Fixed capital, $60,000; capital paid in, $60,000. Assets—Land and water power, $60,000; buildings, $146,000; machinery, $182,000; cash and debts receivable, $90,827; manufactures and merchandise, $149,783; total, $628,561. Liabilities—Capital stock, $60,000; debts, $224,334; profit and loss, $344,226; total, $628,561. On the face of these returns it would appear that the affairs of the company were in very good shape, as the immediate assets equaled the debt on the mill, leaving the plant free of incumbrance. Thus it would appear that the company was in very good condition or that the returns were not properly made out.

The valuation of the Albion Paper Company's plant is about $400,000, and the water power is worth $200,000 or more. According to the Holyoke assessors' books this is the inventory: Machinery, $92,000; mill and storehouses, $115,000; mill site and powers, $82,340; land on Canal street, $3,070; land on Summer street, $680; brick block, $2,800; total, $295,890. There are twelve mill powers owned by the company, and these are valued at about $25,000 each.

The Albion Paper Company was incorporated in 1869. Business was begun in a wooden building on the second level canal near the present mill. In 1878 the first brick mill was built and occupied and the old mill was sold to the Dickinson & Clark Paper Company. One year later another mill was erected and the plant was further improved. Adam Ramage was the first superintendent, and was succeeded in 1878 by William Reardon, who has since had charge of the manufacturing department. The mill is a model of its kind and is considered one of the best book mills in the world. The company employs 120 hands and produces 20 tons a day of book paper, engine and animal sized flats. It has eighteen 1,000 pound engines, three Jordan engines and three 84 inch Fourdrinier paper machines. The pay roll is $5,000 a month and everything has been kept up in first class shape.

The treasurer of the company is Edward C. Taft, who owns or controls $50,000 worth of the capital stock, and the remaining $10,000 is held by Albert H. Page, the paymaster and office manager. Mr. Taft has always lived in princely style and has expended a large amount of money annually. He owns a beautiful residence on Suffolk street, on which large sums of money have been expended. Two years ago he built a palatial summer residence on Northampton street, a reproduction of a castle in England and known as "Kenilworth," which is said to have cost $100,000 or more. He also owns large greenhouses on Suffolk street, which cost considerable money, and he has a fine summer home at Swampscott, where he has had a fine steam yacht, said to have cost $40,000. Mr. Taft has entertained royally, and the family has spent much time abroad. It is said that in order to support this style he has drawn heavily on his account at the mill.

During the past year Mr. Taft has been ill and spent very little time at the mill. It is said that he is suffering from an incurable disease and that he cannot live long. During his absence the business of the company has been managed by A. H. Page, who has done his utmost to stem the tide. Mr. Page has considerable sympathy in the present trouble, because he was a stockholder in the Denver Paper Company, in which he lost quite a sum of money.

It is understood that a large amount of the Albion Paper Company's financial paper is held by the Springfield banks in sums ranging from $5,000 up. Some of the Holyoke banks hold the paper. Nothing has been done to push the company into insolvency, and the general sentiment among the creditors is to allow it to proceed with its business until a statement is made of its affairs, and many think that a reorganization will be effected sooner or later. Meanwhile everybody is busy at the company's office preparing the statement which will be presented to the creditors at the meeting to be held at the Massasoit House, Springfield, this afternoon.

Attachments against the property of the Albion Paper Company have been filed in New York in the order named. One for $6,950 in favor of Christian Schwartz, on an assigned claim of Lewy Brothers; one for $2,770 by John Sinnott; one for $5,520 by Felix Salomon & Co., and one for $1,250 by A. Wertheim & Co. The accounts of Lewy Brothers and F. Salomon & Co. have been reduced somewhat by the purchase from them of portions of their claims by a well-known Holyoke manufacturer. The Jessup & Moore Paper Company has attached property in Philadelphia to cover a portion of its account.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D. trust deed, and Real, a mortgage on real estate.]

MIDDLE STATES.

Mortgagor.	*Amount.*
W. E. Darrow, New York city	$6,567

WESTERN STATES.

Geo. T. Bruce, Los Angeles, Cal.	500
Kwai Lee, Los Angeles, Cal. (Real)	150
Harry M. Morse, Oakland, Cal.	2,000
Railway and Hotel Gazette Publishing and Printing Company, Denver, Col.	300
Clark A. Lewis (Batavia *News*), Batavia, Ill.	750
Freeman A. High, Havana, Ill.	400
Jas. A. Murphy, Litchfield, Ill.	762
J. W. Cultice, Red Key, Ind. (Real)	191
J. A. Flower, Sibley, Ia.	700
Central Kansas Publishing Company, Salina, Kan. (R.)	4,000
W. T. Randolph, Topeka, Kan.	640
Otis Nesbit, Washington, Kan.	300
J. Burnstine & Co., Detroit, Mich.	15,780
David Epstein, Detroit, Mich.	5,492
David Epstein, Detroit, Mich. (Real)	1,250
Scarlett & Co., Minneapolis, Minn.	300
W. T. Ridgley, Great Falls, Mon.	500
John P. Lindner, Helena, Mon.	150
Liber Harding, Omaha, Neb.	1,000
F. B. Davis, Arlington, Wash. (B. S.)	300
Houtkamp & Cannon, Milwaukee, Wis.	1,800

SOUTHERN STATES.

Lynn Elliott, St. Louis, Mo.	250
Brown Hightower, Nashville, Tenn. (Real)	164

DISTRICT OF COLUMBIA.

Chas. B. Fenton, Washington, D. C. (T. D.)	55

LIENS DISCHARGED.

F. A. Flower, Sibley, Ia.	1,400
Wm. H. White, St. Paul, Minn.	400

At a meeting of the trustees of the Stationers' Board of Trade last Tuesday, Silver, Burdette & Co., publishers, Boston, Mass., and the Rogers Company, printer and publisher, Philadelphia, Pa., were elected members of the board.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, March 13, 1896.

THE MONEY MARKET.—Business in the stock market was light, but most of the moving shares closed at higher figures. Call loans on stock collateral were steady at an average of 3@3½ per cent. There were small offerings of time contracts on Stock Exchange collateral at 4 per cent. for ninety days and 4½ per cent. for four to six months, and lenders were disposed to favor long engagements. There is small demand for commercial paper. Rates were firm at 5 per cent. for sixty to ninety day indorsed bills receivable, while four months' commission house names and prime four to six months' single names remained unchanged at 5@5½ per cent., and good names running for the same periods were 6@7. The discrimination by buyers of paper is now more pronounced than at any time this year, and it is impossible to sell paper that is not favorably known. The foreign exchange market was dull and featureless. Posted rates were $4.88 for sixty days and $4.89 for sight. Actual rates were $4.86¼@4.87¼ for sixty days and $4.87¼@4.88¼ for sight.

THE PAPER TRADE.—The leading feature of the market this week was of course the failure of the Albion Paper Company, of Holyoke, Mass., the merchandise creditors of which are scattered in this city. The creditors will meet to-morrow in Springfield, and then a statement of the position of affairs will be made. Other than this the market has been bare of special feature. Trade has progressed in a routine way, none of the grades showing any marked increase in the quantity of favors. As a rule mills were reported as being fairly well supplied with orders.

JUTE BUTTS.—The market is quiet and bare of business.

WOOD PULP.—The demand continues very steady and prices are regular.

WOOD FIBRE.—There is a fair call for Chemical Fibre, and some export orders for Soda Fibre have come to hand. Bleached Soda is quoted at 1.80@2½c. Domestic Sulphite is quoted at 1½@2¼c., as to quality, for Unbleached, and 3c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 1¾@2½c.; Bleached, same process, 2.30@3¼c.; Unbleached, sulphite process, 2.05@3.55c.; Bleached, do., 3@3¾c.; Bleached Straw Pulp, 3.80c. There were imported this week at New York 543 tons of Chemical Fibre, being 220 tons from Copenhagen, 123 tons from Gothenburg, 75 tons from Hamburg, and 125 tons from Hull.

FOREIGN RAGS AND PAPER STOCK.—This was a quiet week so far as new business was concerned, although some importers were kept moving in an endeavor to secure themselves from loss by the failure of an Eastern mill. Imports for the week aggregated 2,275 bales and 543 tons, being 615 bs. rags, 451 bs. papers, 543 tons chemical fibre and 1,209 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 42 bs. rags; Copenhagen, 220 tons chemical fibre; Glasgow, 172 bs. paper; Gothenburg, 123 tons chemical fibre and 495 bs. manillas; Hamburg, 75 tons chemical fibre; Hull, 250 bs. rags, 125 tons chemical fibre; Liverpool, 15 bs. rags, 332 bs. manillas; Leghorn, 150 bs. rags; London, 158 bs. rags, 279 bs. papers and 382 bs. manillas.

DOMESTIC RAGS.—The market is quiet, and prices rule as heretofore reported.

BAGGING, &c.—There is no call for Gunny Bagging just at present, and the quotation of .75c. is entirely nominal. Manilla imports for the week aggregated 1,209 bales, being 495 bs. from Gothenburg, 332 bs. from Liverpool, and 382 bs. from London.

OLD PAPERS.—Low grades continue to move in a very fair way. We quote: No. 1 Hard White Shavings, 2.15@2½c.; No. 1 Soft White do., strictly free from wood, 1.60c.; Soft White do., ordinary, 1¼c.; Old Ledgers, 1⅞c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1⅛c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, 90c.; No. 1 Manillas, ordinary, 75c.; No. 2 Manillas, 60c.; Light Book Stock, 60c.; Folded News (overissues), 50@55c.; Mixed Papers, 35c.; Commons, 25@30c.; Straw Clippings, 45c.; Binders' do., 45c.

STRAW.—There is a moderate demand and, with the supply not large, desirable lots command full prices. We quote: Long Rye at 75@95c.; Short Rye at 50@60c.; Wheat at 45@50c.; Oat at 50@55c.

ROSINS.—Low grades were in demand, but the supply was light. We quote: Common to Good Strained, $1.95@2; E, $2.02½; F, $2.05; G, $2.10; H, $2.15@2.17½; I, $2.25; K, $2.40; M, $2.60; N, $2.70; W. G., $2.80@2.90.

CHEMICALS.—The market for chemicals was quiet. Under date of February 26 J. P. Brunner & Co. speak of the Liverpool market as follows: "For most lines of heavy chemicals the demand is rather poor and most disappointing. For the twelve months ending December 31 last the United Alkali Company have declared a dividend of $2 per share on the ordinary stock and placed £55,000 to the reserve fund. Soda Ash—There is a lack of fresh business, but quotations are maintained by makers. For tierces the spot range is about as follows: Leblanc Ash, 48 per cent., £4 to £4 5s. per ton; 58 per cent., £4 to £4 10s. per ton; Ammonia Ash, 48 per cent., £3 7s. 6d. to £3 10s. per ton; 58 per cent., £3 12s. 6d. to £3 15s. per ton, cash; bags, 5s. per ton less. Soda Crystals selling to a fair extent at £2 7s. 6d. to £2 10s. per ton, less 5 per cent. for barrels, and 7s. less for bags. Caustic Soda very firm, and supplies in moderate compass. We quote spot range according to export market as follows: Sixty per cent., £6 5s. per ton; 70 per cent., £7 10s. per ton, net cash; 74 per cent., £8 5s. to £8 10s. per ton; 76 per cent., £9 5s. to £9 10s. per ton, net cash. Bleaching Powder rather neglected. For hardwood packages, £7 5s. to £7 10s. per ton, net cash, in nominal range, according to destination." There has been no material change in the New York market. The call for Bleach was light, and 1⅞c. was the ruling figure. Caustic Soda was in better movement, as was also Alkali. Sal Soda was in fair jobbing demand. During the week there were sales of Bleach at 1.85@1⅞c.; Soda Ash at 1⅛c.; Soda Caustic, 2.20@2¼c., and Alkali at .90@1c.

CHINA CLAY.—Recent arrivals have supplied the larger consumers and left a fair spot stock. Holders are not trying to force business, and although the demand at present is comparatively light prices are well maintained. We continue to quote English at $11@18, as to quality and quantity, and domestic at $8@10.

TWINES.—There is a steady demand for supplies. We quote: Sisal Hay Rope, 5½c.; Sisal Lath Yarn, 5c.; Jute Ready, 5@6c. Twines—Jute, 18, 10½@11c.; 24, 10@10½c.; 36, 9@9½c.; Jute and Hemp, 18, 13@14c.; 24, 12½@13½c.; 36, 12@13c.; Hemp, 18, 16c.; 24, 15½c.; 36, 15c.; Marlines, Jute, 4½, 9c.; 6, 8½c.; 8, 7½c.; Jute and Hemp, 6, 11c.; 8, 9c.; American Hemp, 4½, 14c.; 6, 13c.; 8, 12c.; Russian Hemp, 4½, 14c.; 6, 13c.; 8, 12c.

COAL.—The Anthracite coal mining interests and the New England railroads have entered into an agreement by which coal freight rates and the prices of coal at competing points in New England territory are fixed, but the figures have not yet been made public.

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PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.16	@	$0.21
Flat Caps, superfines	11½	@	14
Flat Caps, fines	11	@	13
Flat Caps, engine sized	7	@	9
Blotting, American	8	@	12
Blotting, English	17	@	....
Book, super sized and calendered	5	@	8
Book, super sized and tinted	5	@	8
Book, extra machine finish	5	@	....
Book, machine finish, low grade	4½	@	5
News	2¾	@	3
Poster	3	@	..
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2¾	@	3
Colored papers, double mediums	6¼	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	60	@	80
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¾	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	3¾	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	55	@	60
Hardware, light colored, No. 1	4½	@	....
Hardware, No. 1, glazed, tarred	4½	@	....
Hardware, No. 1, glazed	4	@	....
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	30.00	@	40.00
Strawboards, air dried, No. 1, ℔ ton	40.00	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	....
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	65	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	52
24×36, from 24 to 26 lbs. ℔ rm	....	@	48
22×32, from 24 to 26 lbs. ℔ rm	45	@	....
20×30, 21 lbs., ℔ rm	....	@	34
20×30, from 14 to 17 lbs. ℔ rm	26	@	....
16×22, from 12 to 13 lbs. ℔ rm	23	@	....
18×28	....	@	24
15×20, 10 lbs. ℔ rm	....	@	17
15×20, from 7 to 8½ lbs. ℔ rm	....	@	13
14×18	....	@	12
12×16	....	@	11
11×15	....	@	10
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12×18	....	@	14
14×20	....	@	18
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8¼	@	9
Card Middles, rag and wood	9	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	4¼	@	....
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4½	@	4¾
City Whites, No. 1	3	@	3¼
New Seconds, light	2¼	@	....
New Seconds, dark	1¾	@	2
No. 2 Whites	¼	@	1.15
Cotton Canvas, No. 1	3	@	....
Linen Canvas, No. 1	....	@	2½
Country Mixed, free of Woolens	60	@	....
Seconds (City)	....	@	....
Colors, ℔ 100 lbs.	....	@	....
Manilla Rope	....	@	2
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	1.10	@	1.20
Mixed Bagging, No. 1	⅞	@	1
Burlap Bagging, No. 1	1.10	@	1.15
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	....	@	....
Jute Waste	¼	@	1¼

English Old Papers and Shavings.

Hard Shavings, No. 1	2	@	....
Soft Shavings, No. 1	2¼	@	2¾
White and Colored Shavings, No. 1	1¾	@	1⅝
White and Colored Shavings, No. 2	1	@	1¾
Cream Post Shavings	2½	@	....
Paper Collar Cuttings	....	@	2
Briefs and Letters	1½	@	1¾
Books and Pamphlets	1.10	@	....
Old Newspapers	....	@	....
Broken News and Letters	⅞	@	1
Old Blank Books	2¼	@	2⅝
White and Buff Railway Sheets	1¾	@	....

Hamburg Rags, &c.

N S C, New Shirt Cuttings	....	@	4¼
S P F F F, No. 1 Linens	....	@	3½
S P F F, No. 2 Linens	....	@	3½
S P F, No. 3 Linens	2	@	2¾
F G, No. 4 Linens	....	@	2
F F, No. 5 Linens	1¾	@	1.85
Extra Fine Blue Linen, light color	2	@	....
L F B, Blue Linens	2¼	@	....
C S P F F F, No. 1 Cottons	....	@	3½
C S P F F, No. 2 Cottons	....	@	2¾
C S P F, No. 3 Cottons	1¾	@	....
C C C, Colored Cottons	....	@	75
C F X, Low grade Cottons	....	@	75
Extra Fine Blue Cottons	....	@	⅛

Pulps and Fibres.

Ground Wood, domestic, delivered	1	@	1.35
Ground Wood, foreign, ex dock	....	@	....
Soda Fibre, domestic, unbleached	....	@	....
Soda Fibre, domestic, bleached	....	@	2½
Soda Fibre, foreign, unbleached	2.65	@	3
Soda Fibre, foreign, bleached	....	@	....
Sulphite, domestic, unbleached	1¾	@	2¼
Sulphite, domestic, bleached	3½	@	....
Sulphite, foreign, unbleached	2¼	@	3½
Sulphite, foreign, bleached	....	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1	@	1.20
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	....
Alum, Diamond	....	@	2½
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2¾
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¾
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	1.90	@	....
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.20	@	2¾
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	30	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.95	@	2.00
Rosins, E, ℔ bbl	2.02½	@	....
Rosins, F, ℔ bbl	....	@	2.05
Rosins, G, ℔ bbl	2.10	@	....
Rosins, H, ℔ bbl	2.15	@	2.17½
Rosins, I, ℔ bbl	2.25	@	....
Rosins, K, ℔ bbl	....	@	2.40
Rosins, M, ℔ bbl	2.60	@	....
Rosins, N, ℔ bbl	....	@	2.70
Rosins, W G, ℔ bbl	....	@	2.80
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	50
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2½
Sulphuric Acid, 66 ℔ cent	1	@	1¾
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1¾
Vitriol, blue	5¼	@	5½
Yellow Ochre Rocheile	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	3½	@	3¾
No. 2 Whites	1¾	@	2
Common Seconds	....	@	2
Thirds and Blues	1	@	1¼
Southern Mixed Rags	40	@	75
Colors, country	½	@	⅝
Colors, city	25	@	30
New Calicoes, light	1¾	@	1⅞
New Calicoes, dark	1	@	1¼
Shirt Cuttings, best	3¾	@	4
Shirt Cuttings, good	3¼	@	3¾
Shirt Cuttings, unbleached	3½	@	3¾
Shirt Cuttings, unbleached No. 2	2	@	2¼
Shirt Cuttings, cheviots	2½	@	2¾
Overall Cuttings, blue	2¼	@	2¾
Overall Cuttings, brown	1¾	@	1¾
Shoe Rags, bleached	3¼	@	3¾
Shoe Rags, unbleached	2¾	@	3¼
Shoe Rags, brown	2½	@	2¾
Cotton Flannels, bleached	3	@	3½
Cotton Flannels, unbleached	2½	@	3¼
Corset Rags, drab	3½	@	3¾
Corset Rags, white	4	@	4¼
Tailors' Seconds	1¼	@	1¾
Tailors' Colors	20	@	25
Cotton Canvas	2¾	@	3¼
Cotton Canvas, No. 2	1¾	@	1¾
Linen Canvas	1½	@	1¾
New Canvas Cutting	3¼	@	3¾
Insole Canvas	3	@	4
Print Papers, best	25	@	....
Folded News	40	@	45
Old Waste Papers	25	@	30
Manilla Paper, No. 1	75	@	85
Manilla Paper, good mixed	60	@	65
Manilla Paper, blues	50	@	....
Mixed Book Stock	95	@	1.00
Books and Pamphlets	1.10	@	1.20
Book Stock, light	50	@	75
Ledgers and Letters	1¾	@	1¾
Soft Book Shavings	1¾	@	1¾
Hard White Book Shavings	2¾	@	2¾
Leather Board Chips	70	@	75
Straw Chips	35	@	40
Shivey Bagging	1¾	@	1¾
No. 1 Factory Bagging	75	@	85
Burlap Bagging	75	@	80
Burlap Bagging, large pieces	1¾	@	2¼
Kentucky Bagging	1	@	1¼
Mixed Bagging	¾	@	⅞
No. 2 Bagging	½	@	¾
Shakings, soft	¾	@	⅞
Tarred Shakings	1	@	1¼
Standing Rigging	2¾	@	2¾
Standing Rigging, foreign	2¼	@	2¾
Bolt Rope	2	@	2.05
Oakum Junk, No. 2	1½	@	1¾
Tarred Paper Junk	1¾	@	1¾
Tarred Paper Junk, inferior	½	@	¾
Manilla Rope	1¾	@	1¾
Tarred Manilla	1¾	@	1¾
Hemp Strings	1	@	1¼
Sisal Strings	1.10	@	1.20
Wool Strings	½	@	⅝
Flax Tow	½	@	¾
Flax Waste	½	@	¾

Chemicals.

Alkali	95	@	1.00
Aluminous Cake, currency	1¼	@	1½
Alum, American ground	1.75	@	1.80
Alum, American lump	1.65	@	1.70
Anti-Chlorine	2	@	2½
Bichromate Potash	10	@	10½
Bleaching Powder	1¾	@	2
Caustic Soda, 74 ℔ cent	2¼	@	....
Clay, English, ℔ ton	13.00	@	17.00
Clay, American, ℔ ton	10.00	@	11.00
Copperas, ℔ lb	45	@	50
Extract Logwood	5½	@	10½
Lime, Rockland, ℔ bbl	85	@	90
Prussian Blue, ℔ lb	36	@	38
Prussiate Potash, yellow	19½	@	21
Prussiate Potash, red	30	@	37
Rosin, common strained, ℔ bbl	1.90	@	2.50
Rosin, Medium	2.30	@	3.00
Rosin, extra pale, ℔ bbl	3.00	@	4.50
Sal Soda, ℔ lb	65	@	72½
Soda Ash, 48 ℔ cent. caustic	1.30	@	1.50
Soda Ash, 48 ℔ cent. carbonated	....	@	....
Soluble Blue	2.50	@	3.50
Sugar Lead, white	8½	@	....
Sugar Lead, brown	5½	@	5½
Sulphuric Acid, 66°	¾	@	1¼
Terra Alba, ℔ ton	9.00	@	15.00
Ultramarine, ℔ lb	7	@	25
Venetian Red, ℔ lb	1¾	@	2½
Vitriol, Blue	5½	@	5¾
Yellow Ochre	½	@	1

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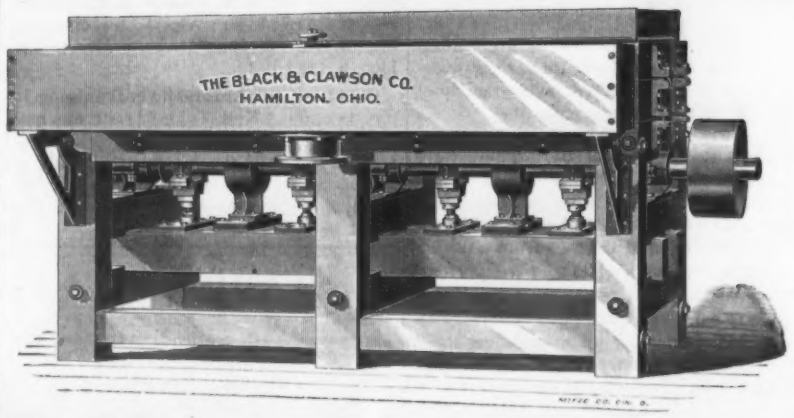

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One 86 inch double cylinder machine; gun metal press rolls; seventeen 36 x 84 inch iron dryers; calenders, reel and cutter, with slitters complete.

One 74 inch Fourdrinier machine; gun metal press and couch rolls; eight iron dryers, 36 x 72 inches; calenders, reel, cutter, slitters and winder complete.

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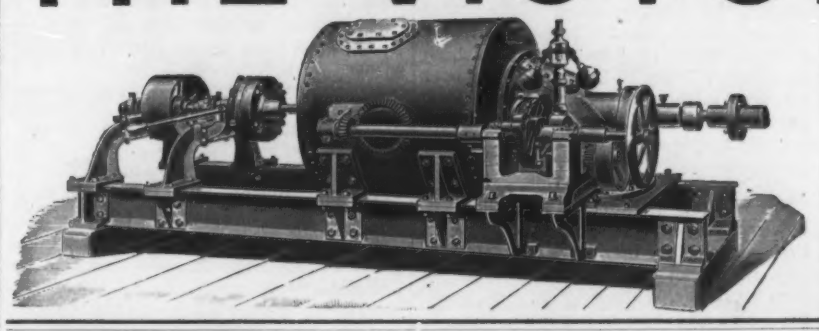

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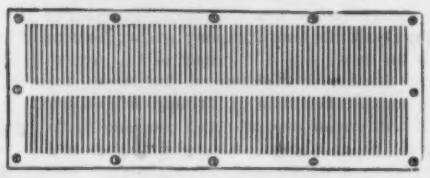

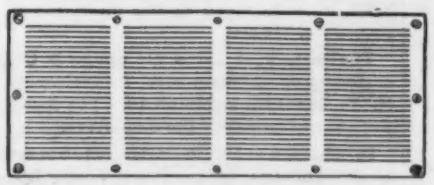

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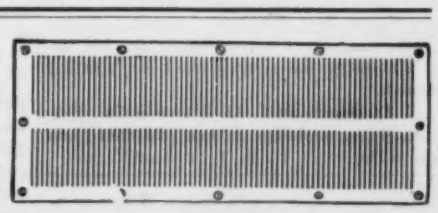

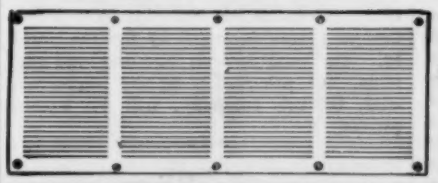

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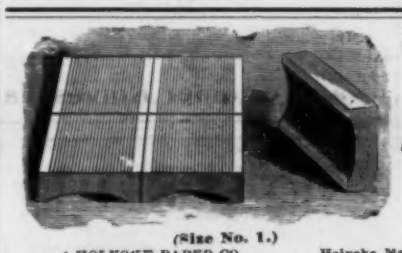

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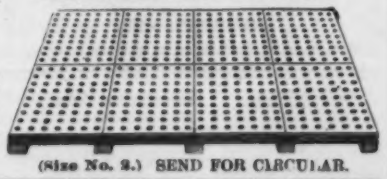

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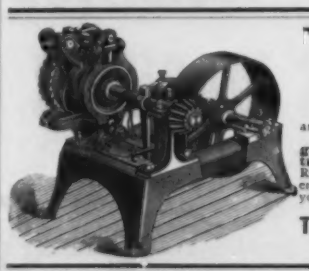
From blue prints of digesters we design and manufacture, in a special department, complete linings of our famous ACID PROOF BRICK in special shapes, each course of which has a distinctive stamp that indicates its position in the lining. This department is under the direction of a chemist who has had practical experience in a sulphite mill. WE SOLICIT CORRESPONDENCE.

Ostrander Fire Brick Co., TROY, N. Y.



WATER POWER

Governed for Paper and Pulp Mills and Electrical Work.

The limit of government of water power is often determined by the design and construction of plant. Consult us if possible before completing your plans. With OUR COMPOUND REGULATORS we will undertake and guarantee the government of water power for all purposes, including Electric Railway, Power and Lighting Plants. We make and sell all of Replogle's Electrical and Mechanical Governors and other devices for the government of water power. Expert advice furnished on application. If results of your present system are not satisfactory write us. Address all inquiries to

THE REPLOGLE GOVERNOR WORKS, Akron, Ohio.

MARK A. REPLOGLE, Chief Engineer.

STOCK'S IMPROVED XVLITE LUBRICATING COMPOUND.

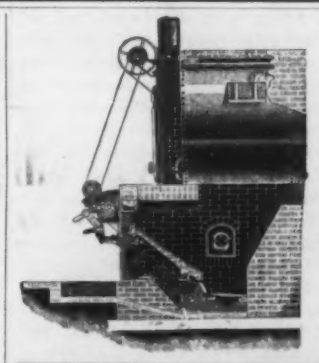
This Lubricant as a friction reducer has no equal, especially on Paper Mill Machinery. It is in use in about 200 mills. This Lubricant is applied by the maker on a twenty day trial, allowing the mill manager to judge of its merits before purchasing. I here give a few names, viz.

CONSUMERS PAPER CO.,	Muncie, Ind.
HARTFORD CITY PAPER CO.,	Hartford City, Ind.
GEO. FRIEND PAPER CO.,	West Carrollton, Ohio.
EAGLE PAPER CO.,	Franklin, Ohio.
MICHIGAN WOOD PULP CO.,	Niles, Mich.
THE L. SNIDER SONS CO.,	Hamilton, Ohio.

I will be pleased to receive communications from mill managers, and to apply it on approval. Address

Q. B. STOCK, P. O. Box 1069, CHICAGO, ILL.

FACTORY: 2450 ARCHER AVENUE.



N. W. TAYLOR. H. H. CAMPBELL.

BRIGHTMAN FURNACE CO.

648 Broadway, CLEVELAND, Ohio,

SOLE MANUFACTURERS OF THE

Brightman Mechanical Stoker

FOR STEAM BOILERS.

THE MOST ECONOMICAL IN FUEL and the Best Device in the World for Preventing Smoke.

It has the Indorsement of Leading Bankers, Chemists and Experts.

USE

It has never been successfully altered since its introduction in 1875.

COMMERCIAL SAFETY PAPER,

TO PREVENT THE "RAISING" OF CHECKS, DRAFTS, ETC.

It is the ONLY PAPER, when once written upon, from which the INK cannot be removed, thereby preventing the "raising" of Checks, Drafts, &c.

— MANUFACTURED BY —

MOUNT HOLLY PAPER COMPANY, MOUNT HOLLY SPRINGS, PA., U. S. A.

Also manufacture a Tub Sized and Loft Dried Map Paper that will not shrink or distort, especially adapted for Printing in Colors, as well as Flat and Folded Ruled Papers of every description.

LOMBARD & CO IMPORTERS AND DEALERS IN GRINDSTONES

OFFICE AND YARD: 2 Sleeper Street, Boston Wharf, BOSTON.

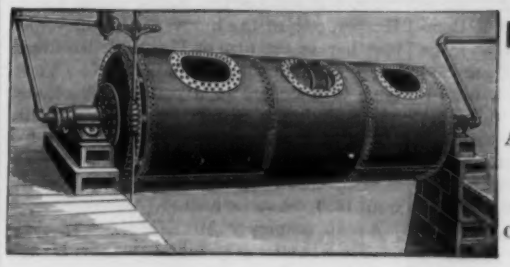
NEW CASTLE PULP STONES

A SPECIALTY.

Grindstones of all kinds, mounted and unmounted, for Mills, Factories, Machine and Repair Shops.

Specially selected GRIT for Paper Knife Grinding.

THE BIGGS BOILER CO., AKRON, OHIO.



MANUFACTURERS OF

Rotary Globe and Cylinder BLEACHING BOILERS

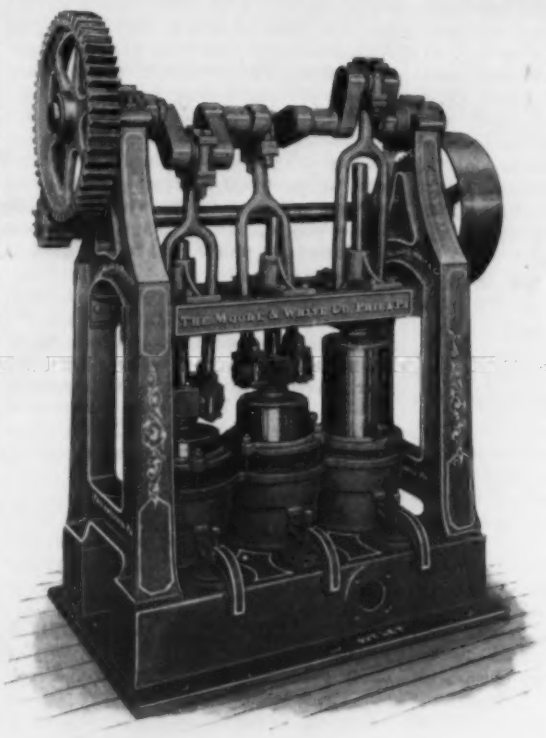
For Straw and Other Pulp.

Also Steam Boilers and all kinds of Sheet and Heavy Boiler Iron Work for Paper Mills a Specialty.

Correspondence Solicited.

Send for Catalogue.

Three Plunger Suction Pump.



DESCRIPTION.

Bronze plungers.
Steel crank shaft.
Wrought iron forged connecting rods.
Brass boxes made adjustable for wear.
Geared 4 to 1.
Pulley, 20 × 6 inches.
Easily packed.
Easy access to valves.
Rubber ball valves with brass seats.
Heavily built with bedplate.
Best and cheapest pump made.
Built in two sizes.

No. 1. Plunger, 6½ in. Diam. 9 in. Stroke. Floor Space, 38 in. × 37 in.

No. 2. Plunger, 8 in. Diam. 10 in. Stroke. Floor Space, 30 in. × 43 in.

Speed, 150 to 200 Revolutions.

THE MOORE & WHITE COMPANY,

Builders of Paper Making Machinery,

Lehigh Avenue and Fifteenth Street, PHILADELPHIA.

Manufacturing News.

EASTERN STATES.

A movement has begun for the utilization of the water power of the Presumpscot River at North Gorham, Me. The water privilege there is owned by the United Indurated Fibre Company, whose officers have in contemplation the enlargement of the present dam and the erection on the site of the company's old factory of a power house for the generation and transmission of electrical power, which it is intended to convey to Portland.

It is reported that a paper mill is to be built at Andover, Conn.

It is reported that the paper mill at Riverton, Conn., which has been idle for a number of years, will be started up at an early day.

About 20 feet of the brick and stone foundation wall have been washed out of the annex on the east side of Train, Smith & Co.'s paper mill at Bristol, N. H.

The Lawrence Machine Company, Lawrence, Mass., has just shipped three of its No. 5, class A, high lift centrifugal pumps to the Rockford Sugar Refining Company, Rockford, Ill.; also three similar pumps to the Atlas Distilling Company, Peoria, Ill.; and now has under construction a number of large pumps, made entirely of bronze, for use in sugar refineries and sulphite fibre mills. While this company makes a specialty of centrifugal pumps adapted to a great variety of purposes in paper and pulp mills, the reputation of its standard double suction pump has become world wide, a fact established by the receipt during the month just past of a large order from Australia.

The Berlin Iron Bridge Company, East Berlin, Conn., is very full of work and running its entire plant with a full force of men. It reports contracts lately completed as follows: New casting shop and machine shop for Randolph & Clowes, Waterbury, Conn.; new car house, engine room and boiler house for the Bergen County Traction Company, Fort Lee, N. J.; a new steel tube plant, including power house, accumulator house, coal storage, &c., for the Pope Manufacturing Company, Hartford, Conn.; two bridges for the American Sugar Refining Company, New Orleans, La.; new power house and boiler plant for the Hackensack Gas and Electric Company, Hackensack, N. J.; a large foundry for the Bagley & Sewall Company, Watertown, N. Y.; a large machine shop for the Granger Foundry and Machine Company, Providence, R. I.; an iron bridge consisting of five spans of 200 feet for Penobscot County, Me.; a new car shed for the Third Avenue Railway Company, New York; three large buildings for the Standard Oil Company, Constable Hook, N. J.; a new forge shop for the Pratt & Whitney Company, Hartford, Conn.; a new storage house for Bradley & Hubbard, Meriden, Conn.; a new tube plant for the Coe Brass Manufacturing Company, Torrington, Conn., and a large extension to a producer house for the Solvay Process Company, Syracuse, N. Y.

Because of the failure of the Bangor Pulp and Paper Company to pay the rent of the paper mill plant at Orono, Me., the Orono Pulp and Paper Company, owner of the plant, has taken possession.

MIDDLE STATES.

The Oswego, N. Y., *Palladium* says: "Manager Hart, of the street car company, has entered into a contract with J. H. Felthousen, representing the Trump Manufacturing Company, of Springfield, Ohio, for two of the celebrated Trump model turbine water wheels. They are for the new power house to be built on the site of the old Shenandoah Mills, and will develop 642 horse power on a horizontal shaft. They are said to be the best in the market, and are to be delivered by May 1."

The tin roof on the building owned by the Standard Flint Paper Company, Kearny, N. J., was blown off in the gale of March 4. It was lifted in one sheet and blown to the next street, striking on the roof and tearing down the smokestack and chimneys of Leon Bellamy's laboratory.

The New York and Pennsylvania Company has ordered eight new digesters for its soda fibre plant at Johnsonburg, Pa., and the foundations of a new building for them have just been laid.

WESTERN STATES.

The Crosby Paper Company, Marion, Ind., has become a member of the Standard Straw Board Company. It is said that the strawboard company will soon close down one or more of the mills controlled by it, but it is also stated that the Crosby mill will not be one of the number.

SOUTHERN STATES.

Work on the new mill of the West Virginia Paper Company, Piedmont, W. Va., is in progress. The new building will be 190x250 feet.

Obituary.

HENRY GILES.

Henry Giles, head machinist of the Remington Paper Company, Watertown, N. Y., died this week of paralysis of the brain. Mr. Giles was well known in business circles as an inventor and a machinist of unusual skill. He was seventy years of age at the time of his death and had been in the employ of the Remingtons for four years. His early home was near Ithaca, N. Y., but later the family removed to Homer, also in this State, and here Mr. Giles was educated and apprenticed to the machinist's trade. He soon opened a machine shop and foundry of his own, and his inventive genius and remarkable skill as a machinist, which soon developed, gained him an enviable reputation. His skill has been recognized in several different places. He was appointed boiler inspector for Cortland County during Governor Cornell's administration and subsequently resided in Washington, Philadelphia, Pa., Elmira, N. Y., Binghamton, N. Y., and Sayre, Pa. At the last named place he was employed in the machine shops of the Lehigh Valley Railroad. His inventions include several well-known appliances used by paper makers, among them being an expanding mandril for paper machines and the paper rolls used in place of those made of iron. The work of perfecting this roll and extending its sale in foreign countries occupied the last few months of his life. Among other of his inventions from which he received royalties may be mentioned balanced slide valves for engines, automatic steam engine governors, locomotive valve gear, and a hoisting machine for elevators. His most notable invention, however, was the fish plate used for binding steel rails. A high tribute was paid to Mr. Giles' genius last summer by the Inventors' Institute of Paris, France, in the presentation of a gold medal of honor.

Three sons and two daughters survive the deceased: Julian A. Giles, of Oswego, superintendent of the Oswego Tool Company, also a noted inventor; Frank J. Giles, foreman of the foundry department of the Watertown Steam Engine Company; Bert H. Giles, of Watertown, erecting engines with the Steam Engine Company; Mrs. Chas. Frasier, of Homer, and Mrs. J. W. Royce, of Cortland. The funeral services were held from the residence of his son, F. J. Giles, and the interment took place at Homer.

PHILIP J. A. HARPER.

Philip Jacob Arcularius Harper, a former member of the firm of Harper & Brothers, died on March 6 at his home, the old Thorne mansion, Hempstead, L. I., of Bright's disease.

Mr. Harper was the eldest son of James Harper, one of the founders and the senior member of the firm of Harper & Brothers, who was at one time the mayor of New York. He was educated in a private school, and when eighteen years old he entered his father's employ, and in 1869 succeeded his father as a member of the firm. He remained an active member of the house until 1890, when he retired.

As an employer Mr. Harper was very generous, and never failed to show his appreciation of faithful service on the part of employees, and his deeds of charity were numberless and unostentatious.

Mr. Harper married Harriet Mead, daughter of Ralph Mead, in 1846. Mrs. Harper died in 1856. Mr. Harper in 1859 married Miss Augusta M. Thorne, of Hempstead, who survives him. He also leaves a son, James Harper, who is now a member of the publishing house.

Mr. Harper was elected a trustee of Hempstead village nine times, and served five years as president. During his incumbency as president he erected at his own expense buildings for the fire department of the village, and in many other ways manifested a public spirit of unusual munificence.

Mr. Harper was for twenty-five years treasurer of Morton Lodge No. 63, a Masonic organization of Hempstead, one of the oldest in the State. He was for many years an officer in the Methodist Episcopal Church. He was in early life a member of the choir of the John Street Church, New York, and was connected with it for a long time afterward.

JOHN MARKLE.

John Markle, a retired paper manufacturer, died at his residence in Roxborough, Philadelphia, on March 3, of general debility.

Mr. Markle was born on May 14, 1814, in Rittenhousetown, a settlement which formerly existed on the Wissahickon Creek, but which was obliterated when the site was added to Fairmount Park. His ancestors were among the early settlers of Germantown. He learned the paper making business with his father, George Markle, in the old Rittenhouse paper mill, the first in this country. He subsequently succeeded his father, and carried on the business until he began the manufacture of wire cloth used in paper making on Dock street. In 1850 Mr. Markle retired and devoted himself to Roxborough, to which place he had removed the year previous.

In 1846 he was married to Sarah M. Levering, daughter of John Levering, whose grandfather, Wiggard Levering, was one of the first settlers in Roxborough. Mrs. Markle died in 1883. Three children, a son and two daughters, survive him.

NAT W. PRATT.

Nat W. Pratt, president of the Babcock & Wilcox Company, died at his home in Brooklyn, N. Y., on March 10. He was born in Baltimore in 1852, and inherited from his father, William Pratt, those qualities which made him an important factor in the world of engineering and invention. At one time he was consulting engineer of the Dynamite Gun Company, and at the time of his death was a member of the American Society of Mechanical Engineers, the American Institute of Mining Engineers, the American Institute and the Engineers' Club of this city. An aged father and mother, a widow and three children survive him.

N. B. Fairclough, of Fairclough & Van Ness, manufacturers of paper boxes, Paterson, N. J., is dead.

Personals.

J. Marahs, who for several years has been employed as superintendent at the mill of the Mount Tom Sulphite Company, Mount Tom, Mass., will leave shortly for his native country, Austria, for the benefit of his health.

C. D. Brown, of C. D. Brown & Co., Boston, Mass., and Mrs. Brown will next week go to Dansville, N. Y., for a month's rest.

The "Hamilton" Felt.

"Best and Most Economical Made."

The Longest Runs

are always made with the "Hamilton." Once accustomed to its use, you will buy no other. Prices as low as inferior makes are sold at.

In ordering, mention kind of stock used, quality of paper made and speed of machine.

SHULER & BENNINGHOFEN,
HAMILTON, OHIO.

Ventilating Fans,
Paper Dryers,
Heating Apparatus,
Blowers and Engines.

AMERICAN BLOWER CO.,
SUCCESSORS TO
BUFFETT & SMITH MFG. CO.,
Detroit, Mich.

SEND FOR CATALOGUE.

Fires.

Charles W. Kirkley, paper dealer, Washington, D. C., has been burned out.

Jas. Bowes & Son, printers, Halifax, N. S., have been burned out. Insurance, $3,800.

Examiner McKinney, publisher, McKinney, Tex., has had a fire loss of $2,000; insurance, $1,500.

The stock of J. Otis McFadden, dealer in wall paper, Boston, Mass., has been damaged by fire to the extent of $4,000.

The printing office of Gillam Sons Company, Philadelphia, Pa., was damaged by fire on March 7. Insurance, $15,000.

Hawkins & Co., booksellers, stationers, &c., New Orleans, La., have been damaged by fire to the extent of $20,000; insurance, $5,000.

The *Ledger* Publishing Company, Mechanic Falls, Me., was burned out on February 27. The loss was $3,000; insured for $2,000.

Richard Herman & Co., printers and lithographers, 160 William street, New York, were damaged by fire on March 10. Insurance, $13,300.

The factory of Louis De Jonge & Co., coated paper manufacturers, Tompkinsville, N. Y., took fire on March 10. The flames were extinguished by the employees.

In addition to the insurance noted in last week's JOURNAL on the Peter Young bagging factory, Brooklyn, N. Y., burned last week, there is a further amount of $77,500, making a total of $147,500.

Henry Daniels & Brother, bookbinders, Philadelphia, Pa., were damaged by fire and water to the extent of $5,000 on March 7. The origin of the fire is unknown, but it is supposed to have started in a bin used for waste paper.

The Lartz Wall Paper Company, Chicago, Ill., a branch of the National Wall Paper Company, was damaged by fire on March 10. The total loss on building and contents, but principally on the high-grade stock of this company, will not exceed $40,000.

In Town.

Col. S. P. Train, G. W. Wheelwright and C. D. Brown, Boston, Mass.; E. F. Daniell, Franklin, N. H.; G. T. Keyes, East Pepperell, Mass., and D. G. Cahoon, Potsdam, N. Y.

General Notes.

F. H. Foss, dealer in books and stationery, &c., Dover, N. H., has been damaged by water to the extent of $5,000.

James Hennessy, who was formerly in the paper stock packing business, but who for several years past has been engaged in another line, will open up in his old trade in his building in City Hall place, New York, about May 1.

The Crocker Manufacturing Company, Holyoke, Mass., announces that it will make during the week or ten days succeeding March 16 its specialties in cover papers as follows: Robin's egg blue, Victoria green, primrose, straw, canary, fawn and corn. Orders should be sent in at once.

The 1896 edition of the Directory of Paper Makers of the United Kingdom has been issued by Marchant, Singer & Co., 47 St. Mary Axe, London, E. C. It gives as usual a full list of paper making firms, the names, numbers and location of mills, the character of product, London agents, watermarks, &c.

Some weeks ago reference was made in these columns to the placing of two Knowles vertical duplex, double acting, geared power suction box vacuum pumps in the Hollingsworth & Whitney Company's mills at Gardiner, Me. In regard to the working of these pumps the following letter received by the Knowles Steam Pump Works is presented as showing the satisfaction which the Knowles pumps always give:

OFFICE OF HOLLINGSWORTH & WHITNEY COMPANY
(Cobbossee Mills and Aroostook Mills),
GARDINER, Me.

Messrs. Knowles Steam Pump Works,
183 Devonshire Street, Boston, Mass.:

GENTLEMEN—In regard to the five 14x10 double acting double suction pumps which you furnished us, will say that they have been giving us first-class satisfaction. We have two of them running on our 135 inch machines, one of them on each machine handling four suction boxes, and they do the work, giving us all the suction we need.

We have found them well made, and the workmanship first class. You must know we like them very much, as we have given you a second order. Yours truly,

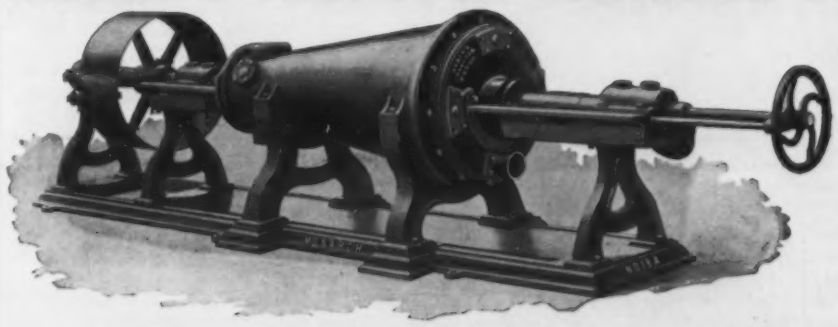
H. & W. Co.,
F. E., Boston Agent.

J. E. Rhoads & Sons, 239 Market street, Philadelphia, have added to their already full stock of oak tanned belting another style of belt. It is high grade, medium weight, short lap, oil treated and rivetless. It is their "Diamond State" brand. This firm recently made tests of its belting in comparison with some other high grade

The W. S. Tyler Wire Works Co.,
CLEVELAND, OHIO.
MANUFACTURERS OF
FOURDRINIER WIRES,
Cylinder Faces and Washer Wires.

THE GENERAL FIRE EXTINGUISHER COMPANY,
CONTROLLING THE INVENTIONS AND APPARATUS
PERTAINING TO AUTOMATIC SPRINKLERS OF
Frederick Grinnell, William Neracher, John Hill, William Kane and others.
INFORMATION AND PROPOSALS FURNISHED AT THE SEVERAL DEPARTMENT AGENCIES, NAMELY:
NEW YORK: 413 Broadway.
PHILADELPHIA: Mutual Life Building.
CHICAGO: Pullman Building.
CLEVELAND: Society for Savings Building.
BOSTON: 173 Devonshire Street.
BUFFALO: City Bank Building.
ST. LOUIS: Rialto Building
Also at WARREN, OHIO, and COLUMBUS, GA.
AND AT THE
EXECUTIVE OFFICES, PROVIDENCE, R. I.

NOBLE & JOHNSTON MACHINE CO., Hoosick Falls, N. Y.,
MANUFACTURERS OF



Paper Mill Machinery,
JORDAN and BEATING ENGINES,
IRON OR WOOD TUBS, LAID OR STEEL BARS AND KNIVES. BED PLATES AND JORDAN FILLINGS OF EVERY DESCRIPTION A SPECIALTY. Correspondence solicited.

makes, and the results are said to have clearly demonstrated that its "Gilt Edge Short Lap" belting is the peer of the very best brands both for tensile strength and minimized stretch. The firm is sparing no pains to maintain the standard of Rhoads belt as one that will certainly give satisfaction to all belt users.

I. H. Pratt, 677 "The Arcade," Cleveland, Ohio, reports business good in the sale of Corliss engines made by the Bales Machine Company, Joliet, Ill. This company manufactures simple, compound, triple expansion and condensing engines, and takes contracts for complete power plants.

Frank S. Noble has been appointed receiver of the N. Y. Aristotype Company, of Bloomfield, N. J., by Judge Beekman on the application of Paul Harrison, the treasurer of the company. Mr. Noble is the secretary of the company and is also president of the Ilotype Company, manufacturer of sensitive photo papers, with offices at 165 Pearl street, New York, and factory at Bloomfield, N. J. The company was incorporated in September, 1892, with a capital stock of $25,000, to manufacture photographic supplies. Land was purchased at Bloomfield and a factory erected there. The liabilities are $29,000 and nominal assets $35,400, of which $24,400 is tied up in the factory property and plant. The principal creditors are the Ilotype Company, $12,500; Frederick M. Harrison, $8,027, and the Bloomfield Bank, $3,000. Frederick M. Harrison is the principal stockholder, having $10,600 of the stock. The company's assets in this city consist of book accounts, $1,908. It is reported that F. M. Harrison has been appointed receiver of the Ilotype Company.

Properties of Coloring Matters.

The various coloring materials used in paper making may be classified into two divisions, viz.: Pigments and dyes. Pigments are generally mineral substances, ground into an exceedingly fine state of division, which, when placed in the beater, form an intimate mixture with the pulp and produce a colored or tinted sheet, not by virtue of any dyeing action upon the fibres, but by reason of their cohesion. Thus the physical qualities of the pigments as regards their degree of fineness, the specific gravity and the consequent percentage of retention are matters of considerable importance.

Although for coloring paper the use of soluble aniline dyes is fast superseding the use of insoluble pigments, the latter class of dyes possesses a peculiar advantage in the production of certain particular shades of toned papers. The pigments most commonly met with in the course of paper manufacture are yellow dyes, such as the ochres and chrome yellow, blue coloring matters of which ultramarine is the principal type; orange and red dyes like venetian red, indian red, &c., and sundry other colors, as green, umber, mineral black, &c. Most of these occur as dry powders, while some can be procured in a moist state under the name of "paste" colors.

The principal characteristics of pigments, which define their value, are freedom from grit, the fineness of the particles, their capacity for resisting the action of the various chemicals in the beating process, notably alum, and finally the actual tinctorial power possessed by each kind of dye. The fineness of the particles determines very largely the amount of dye actually retained in the paper. This fineness and the freedom from grit can be examined in all insoluble pigments by what is known as the "gravity" test.

A fairly large quantity of the pigment is carefully weighed out—about a quarter of a pound—and thoroughly stirred in a large glass or porcelain vessel with one-half gallon of water. This is allowed to stand for five minutes. The heaviest particles settle to the bottom, and the supernatant liquid, containing the major portion of the finer particles, is quickly poured off. The portion remaining at the bottom of the vessel should be again stirred with water and the milky liquid poured off a second time. If necessary, a third washing should be resorted to. The washing may be considered complete when the liquid appears almost clear after standing five minutes. The sediment should be carefully poured into a small glass vessel, dried and weighed. The weight calculated on the original amount taken gives the percentage of grit, and is a measure of the possible retention. A large amount of grit points to a poor retention of color, and hence a waste of material in accomplishing a desired effect.

Ultramarine is a complicated chemical substance, the true nature of which is not known. The constituents have been ascertained by analysis, but the way in which these are united in the mineral has yet to be discovered. It contains varying proportions of silica, sodium oxide, alumina and sulphur, the proportions probably fixing the tinctorial value of the dye, which varies greatly in different samples. This color is readily acted on by acids or bodies like alum, which possess an acid reaction. Mineral acids, such as sulphuric and hydrochloric acids, easily discharge its color, even when dilute. Alkalies have no action upon it. The value, therefore, of an ultramarine greatly depends upon its power of resisting alum. This value may be approximately determined by the following test:

To compare the alum resisting properties of any two or more samples mix equal quantities of the samples with water, using the same quantity of water in each case. Add to each an equal quantity of dilute alum solution, prepared from the ordinary mill supply of alum or aluminous cake, or, for special tests, from pure alum. The length of time required for the samples to fade down to a comparatively permanent color is a measure of the alum resisting power. It is convenient to have a similar set of samples mixed with water containing no alum for the sake of reference. The samples must be thoroughly stirred when examined for color, as the pigment settles at the bottom of the vessel.

Another plan consists in mixing the sample with pulp and water. In this way the necessity for stirring is done away with, as the color particles remain suspended in the pulp.

Prussian blue is a ferrocyanide of iron, which, when dry, is a bright blue powder possessing a brownish tint like copper. It is susceptible to the action of alkalies, but is unaffected by acids, in which peculiarity it differs from ultramarine. This color is often produced direct in the engine by adding first an iron salt, like ferric chloride or ferric sulphate, and afterward potassium ferrocyanide. Ferrocyanide of iron is precipitated as a blue dye upon the fibres, and produces a more permanent and even tint than the mere addition of the powder.

A mixture of Prussian blue and ultramarine may be detected by the following test: Warm the sample with fairly strong caustic soda and filter. The filtered liquid contains any Prussian blue which may be present in the mixture, and is detected by a deep blue precipitate (Prussian blue) formed on the addition of ferric chloride to the liquid. Before ferric chloride is poured in acid must be added in sufficient quantity to neutralize all the soda.

Chrome yellow is a neutral chromate of lead of a bright yellow color, insoluble in water and unaffected by acids. It is soluble in weak caustic soda, and any undissolved matter left may be regarded as an adulteration, if any large quantity is insoluble. It is sometimes precipitated direct upon the fibres by the successive addition of sugar of lead and a solution of bichromate of potash.

The name of ochre is given to a class of colors which can be obtained in almost any tint, from white to brownish red. The pigments are clays whose color is due to varying percentages of oxide of iron present in the mineral.

Venetian red is a sesquioxide of iron obtainable in various shades. It is almost completely soluble in dilute muriatic acid.

Paste colors, which are generally sold in a moist state, are more liable to adulteration than the dry powders. As the color of a paste is far darker than the dry color the adulteration cannot be detected by the eye alone. If a color is sold at 40 per cent. the percentage can be determined by the weight of residue left on drying a weighed quantity of the paste. Such possible adulterants as chalk, gypsum, starch, mineral white, &c., can only be detected by chemical analysis.

Aniline colors behave toward the fibres in a way totally distinct from the action of mineral pigments. While the latter adhere to the fibre by virtue of their cohesive properties, all soluble dyes, like carmine and the aniline colors, act upon and color each fibre, requiring precipitation by a mordant, *e. g.*, alum. Hence the effect produced is far greater and the retention is practically complete. A very simple test for insuring complete precipitation is as follows: Squeeze out a handful of the dyed pulp some little time after the addition of the coloring matter and alum. Place the moist pulp between two sheets of blotting paper. In the case of complete precipitation, the blotting paper becomes moist without being colored, whereas if the dye is in completely precipitated upon the pulp the blotting paper takes the color of the dye which is shown to be in solution. The aniline colors are generally grouped into acid and basic dyes. Acid colors are best developed by the use of a slight excess of alum, or by the addition of acetate of alumina. Basic colors, on the other hand, should not be treated with any excess of sulphate of alumina, and are considerably improved by the use of a little borax. Among the acid colors are orange, scarlet, red, blue, black dyes, such as quinoline, yellow, cotton scarlet, soluble blue, nigrosine. Among the basic colors are green, yellow, violet, purple, and certain blue colors, such as diamond green, auramine, methyl violet, marine blue.—*British and Colonial Printer and Stationer.*

Clearance and Compression.

I've been trying to get up to knowing just a little something about the effect of clearance and compression on the cylinder of a steam engine, but don't seem to get along very well in doing so; seem to stick on the centres, so to speak, like an old engine that doesn't know whether it's just the proper thing to go ahead or to go back and try it all over again. You've seen just such engines.

It seems to me to be easy enough—that is, for one who knows how—to prove anything he wants to prove on the subject; prove it by figures as easily as twice two are four. You can find figures kept in stock, or you can get them made to order, to prove, if you'll only believe, what a lot of humbug there is about clearance; doesn't amount to much if you've only got lots of compression. Compression just covers up the evil, or the most of it. This looks all right; seems all right for your old-fashioned, long ported engine till the other fellow comes along and shows by better figuring where the first figures are all wrong. Then comes along the man with the indicator. He joins in the hunt and declares that both are 'way out; just exactly wrong. Figures may go astray, but the indicator will not lie, and there's what it says. See? Finally some fellow borrows an engine, scales and a coal pile, and proves by avoirdupois that everybody else is wrong, and is never certain that he is anywhere near right. You see, Mr. Editor, it's a good deal easier to prove that everybody else is wrong than to prove that you yourself are right. Comes more natural like.

That's just about where I stand on the compression question at this writing. It's mighty hard finding anything you are willing to nail your faith right to, and you are apt to conclude that the man who doesn't know anything about compression and doesn't pretend to, but goes right along building a pretty good steam engine, is about as good authority as anyone. When you try to read up and study up the matter, things that ought to consist don't consist, seems to me. But we all bank on books, you know, rely on books and those who ponder over books.

You see, it was this way: The old man, Bildmake, had a nice little shop—making money—but was never just satisfied till he started in building a real automatic steam engine. Done the better class of steam engine repairs, the old man had, for all around for ten years or more, and two years ago just made up his mind that he could fill a long felt want by putting a genuine automatic engine on the market himself. Not an "astonisher" or an "eye opener," or anything of that sort, but something that should turn over right along just as a well conditioned steam engine ought to turn over.

The old man is one of the best men in the world. Wouldn't wrong even himself, not if he knew it, he wouldn't. He brought out a half dozen sizes of the new engine, none of them very large; just about right for the trade at Thereaway and the rest of the county; taking care of the local trade, he called it. He had looked after the shop pretty much himself, but now he had to have a draftsman—must have some drawings of the new engine. Then he had to have some one to help him around the shop. There was the general work of the shop to be looked after, which had been growing for some time, and the new engine to be looked after. This is how I have become interested in clearance, compression and the like. You can't build engines without clearance, but you can build them to run without any compression worth grumbling about.

The old man had several engines running, some of them just about as smooth as anybody could ask for, and others that rattled around rather vigorously; seemed to be trying to get away. The old man didn't have time to find out the reason, so he set me to help him in a sort of a way.

As I remarked, we all bank on books; even the old man when he started in on the new enterprise—automatic steam engines—bought a little library (sort of office library) of books on the steam engine, into which he never looked, not to anyone's knowledge; but when I pressed him on the subject of compression he just referred me right to the library, particularly recommending Rankine. Knew more about engines, Rankine did, in his day, than all the rest put together. Stay as late as you like Saturday afternoon, the old man said, and read up on the whole business. Learn something for yourself and something for the new engine.

I stayed as he advised, and just took down Rankine. Well, now, I could read just about as much of this as I could of Greek, just about; but I could read a plain statement, and I read that the most advantageous adjustment of compression is "when the quantity of steam confined or 'cushioned' is just sufficient to fill the clearance at the initial pressure."

That was plain enough, to be sure, but somehow you always want to see what some one else says. Sort of fortifies your ground; makes you feel safer like, I reckon. Then I found that other authorities quite disagreed with Rankine. Some of them gave formulas that no fellow like me could read, and altogether they left me right in a muddle.

Finally I came to the conclusion that if I were to decide for myself I would arrange to have compression in every one of the old man's engines up to three-quarters boiler pressure, and take the chances.

I wonder if some one or some society will not arrange for experiments that will finally settle the whole business; just let light in for the benefit of us who don't know anything about it, only by the operation of some particular engine we have to do with, and not much then; make it tell its own story that we don't know how to read at present.

George H. Corliss used to build steam engines, and the indicator fellows always said they didn't have compression enough for smooth running or good economy, didn't have any compression at all worth speaking of, perhaps, because there wasn't room in the valve gear for it, and probably because he didn't want it. Didn't talk much about his reasons—they say Mr. Corliss didn't—but he got together an engine that is rather hard to beat. Then other builders followed by jamming whatever was left in the cylinder right up against the boiler, but they never seemed to get away with Mr. Corliss very much.

Speaking about clearance, I know a builder who built an automatic that proved quite too large for the work, just as you have seen a good many engines, I suppose. Well, he bushed the cylinder down to about the right size; bushed it 'way down to where the terminal pressure didn't get all tangled up with the vacuum. Going to save coal, he thought, and everybody else would have thought the same. The cylinder was too large and was bushed to the right size, and the fireman had to wheel just as much coal as he did before.

I suppose the clearance was increased by the bushing—must have been. Wonder just what this had to do with it? Then there was less compression. Sort of at odds and ends the whole thing seems to be.—*John Lookaback in Machinery.*

Care of Isolated Electric Lighting Plants.

It has been said that some are born great, some achieve greatness, while some have greatness thrust upon them. There is a certain application of this quotation to those having charge of electric plants. A very few may have been born electricians, many have achieved the art of management, while others have had the responsibility thrust upon them in addition and supplementary to their other duties. The writer finds himself in the latter category, and with very interesting company. When you find a middle-aged man in such a position it will often be found to be a case of "have to." A very efficient superintendent of a certain gas and electric light company told me this was the reason why he "booked up" on electrical matters.

He was an educated gas engineer, but when his company absorbed the electric franchise he came into control, and studiously acquired the necessary technical knowledge for intelligently managing the electrical branches of the enterprise. Those for whom this paper is intended are, however, of that more numerous class who have to acquire the art of caring for and operating electrical apparatus, and who perhaps have little opportunity or inclination for becoming versed in the science upon which it is constructed.

To illustrate my idea of how a man who is about to have the care of such apparatus thrust upon him should "hold his mouth," I will copy part of a letter just written to a friend who is in that position, and who has asked me for advice and information.

"You are to install a lighting plant and wish to profit by my mistakes, which have been many and flagrant. It will be a good plan for you to visit all of the other plants in your vicinity and look up the mistakes in them, so you can learn how not to do certain things. It is just as necessary to know the rocks as the deep water in a channel you are about to navigate. Divest your mind of the idea that there is any mystery about operating the dynamos and simply use your horse sense in everything you run up against. Don't try to fathom the science of it; Edison nor Tesla haven't done that yet; just acquire the art of making the thing go right, and when you can do that well, you will see more into the reasons why you do certain things, and why desired results follow.

"Put the belts on to the machines and run them just as you would any other piece of mechanical apparatus of similar weight and speed. If fields are not connected and the brushes not in contact with the commutator, the dynamo is simply a machine and you know as much about running it as any electrician. The man who is to set up the apparatus will show you all about adjusting brushes, &c.; that is, if he is a square man and is not looking for an opening to run the plant himself. Symptoms of this would be an air of mystery, the use of technical language, and oft-repeated stories of disaster to other plants.

"Don't get rattled at all the wires, cables and instruments at the switchboard; they are all useful and most of them absolutely necessary, and they are no more complicated than the piping about your plant, with which you are so familiar as to almost invite contempt.

"You will find that there is an armature made to revolve between two or more 'fields,' and that as the latter become magnetized they have an attraction that tends to hold the armature from turning, but the belt knows a 'good thing' and 'pushes it along,' thus generating current which the winding carries to the commutator, where it is picked off by the brushes and passed along to the circuit. If your circuit is kept whole and the machine in good order, there is less need of trouble with it than with a buzz saw.

"Don't be afraid of the brown gloss on your commutator; it is better than raw copper. Read all of the best mechanical papers and catch on to all the kinks you can."

The above was written to a plain, common-sense and conscientious engineer. He will be all right; he understands handling machinery and will acquire the art of caring for his new installation.

What follows regarding dynamos and their use is mostly mechanical, although mechanical effects can be produced by electrical action.

Commutators will get cut and worn until sandpapering will no longer suffice, and they must be turned. To do this, either the whole shaft must be taken to a lathe, or the commutator must be disconnected and turned on an arbor, or there must be appliances for turning it off in position. To take out an armature shaft means more or less work, according to the size and design of the machine. In some makes the designer seems to have neglected to provide any decent means for such work, while in others even efficiency is sacrificed to ease of dismemberment. To take the commutator from the armature and replace it correctly requires skill. It can be turned apparently true on an arbor, but when it is put back every imperfection of lathe and arbor will be multiplied, and the "latter state" of that commutator will be worse than the first. Turning off in position, however, leaves nothing to be wished for if properly done, but to do it properly there is required something besides a chasing tool and a gas pipe rest. Briefly, the requirements are a slide rest, the right speed, and the "know how." The last requirement includes the second, but does not provide the tools. Most builders can furnish, if required, slide rests specially made to clamp onto the base or frame of their dynamos so as to bring the tool post to the proper position for doing the work. If a special rig is not to be had, the slide rest and tool post can be taken from a lathe, and fastened to a plank bolted to the frame, and in connection with the "know how" a good job can be done.

Many electric light engines cannot be run slow enough with the regular pulleys to properly turn a commutator. Different methods will suggest themselves for accomplishing this purpose, as, for instance, a small engine that can be quickly bolted to the floor opposite the dynamo and having a small pulley on the crank shaft belted directly to the dynamo pulley. A 3x5 upright weighing only about 100 pounds will do the work all right. A few feet of steam hose is very convenient for making easy and quick connections to some nearby steam pipe. In some cases a length of light shaft can be erected and pulleys arranged so that the regular engine can be run slow enough to do the work.

For a commutator 8 inches in diameter a speed of 50 revolutions per minute will answer well. The tool must be very hard and sharp to cleanly cut the soft copper and hard mica insulation, as a dull tool will pull the copper across from one segment to the next. I have also found it better to turn the commutator in the direction opposite to that in which it regularly runs, for then the sharp tool will better get under and pare off any thin places there may be where the brushes have spun the metal into and across the insulation. After the commutator is turned true, take a float file and draw lengthwise of the segments over the lines of mica. This will remove any little particles of copper that may have lodged between them. Some use fine sandpaper after truing and draw filing, but if the copper is clean I see no good reason for this. Of course, there should be as little metal removed as will get the commutator true, for, like the water that has passed the mill, the lamps will never light with the copper that has gone.—*Peter H. Bullock, in American Machinist.*

Manufacturing News.

EASTERN STATES.

A movement has begun for the utilization of the water power of the Presumpscot River at North Gorham, Me. The water privilege there is owned by the United Indurated Fibre Company, whose officers have in contemplation the enlargement of the present dam and the erection on the site of the company's old factory of a power house for the generation and transmission of electrical power, which it is intended to convey to Portland.

It is reported that a paper mill is to be built at Andover, Conn.

It is reported that the paper mill at Riverton, Conn., which has been idle for a number of years, will be started up at an early day.

About 20 feet of the brick and stone foundation wall have been washed out of the annex on the east side of Train, Smith & Co.'s paper mill at Bristol, N. H.

The Lawrence Machine Company, Lawrence, Mass., has just shipped three of its No. 5, class A, high lift centrifugal pumps to the Rockford Sugar Refining Company, Rockford, Ill.; also three similar pumps to the Atlas Distilling Company, Peoria, Ill.; and now has under construction a number of large pumps, made entirely of bronze, for use in sugar refineries and sulphite fibre mills. While this company makes a specialty of centrifugal pumps adapted to a great variety of purposes in paper and pulp mills, the reputation of its standard double suction pump has become world wide, a fact established by the receipt during the month just past of a large order from Australia.

The Berlin Iron Bridge Company, East Berlin, Conn., is very full of work and running its entire plant with a full force of men. It reports contracts lately completed as follows: New casting shop and machine shop for Randolph & Clowes, Waterbury, Conn.; new car house, engine room and boiler house for the Bergen County Traction Company, Fort Lee, N. J.; a new steel tube plant, including power house, accumulator house, coal storage, &c., for the Pope Manufacturing Company, Hartford, Conn.; two bridges for the American Sugar Refining Company, New Orleans, La.; new power house and boiler plant for the Hackensack Gas and Electric Company, Hackensack, N. J.; a large foundry for the Bagley & Sewall Company, Watertown, N. Y.; a large machine shop for the Granger Foundry and Machine Company, Providence, R. I.; an iron bridge consisting of five spans of 200 feet for Penobscot County, Me.; a new car shed for the Third Avenue Railway Company, New York; three large buildings for the Standard Oil Company, Constable Hook, N. J.; a new forge shop for the Pratt & Whitney Company, Hartford, Conn.; a new storage house for Bradley & Hubbard, Meriden, Conn.; a new tube plant for the Coe Brass Manufacturing Company, Torrington, Conn., and a large extension to a producer house for the Solvay Process Company, Syracuse, N. Y.

Because of the failure of the Bangor Pulp and Paper Company to pay the rent of the paper mill plant at Orono, Me., the Orono Pulp and Paper Company, owner of the plant, has taken possession.

MIDDLE STATES.

The Oswego, N. Y., *Palladium* says: "Manager Hart, of the street car company, has entered into a contract with J. H. Felthousen, representing the Trump Manufacturing Company, of Springfield, Ohio, for two of the celebrated Trump model turbine water wheels. They are for the new power house to be built on the site of the old Shenandoah Mills, and will develop 642 horse power on a horizontal shaft. They are said to be the best in the market, and are to be delivered by May 1."

The tin roof on the building owned by the Standard Flint Paper Company, Kearny, N. J., was blown off in the gale of March 4. It was lifted in one sheet and blown to the next street, striking on the roof and tearing down the smokestack and chimneys of Leon Bellamy's laboratory.

The New York and Pennsylvania Company has ordered eight new digesters for its soda fibre plant at Johnsonburg, Pa., and the foundations of a new building for them have just been laid.

WESTERN STATES.

The Crosby Paper Company, Marion, Ind., has become a member of the Standard Straw Board Company. It is said that the strawboard company will soon close down one or more of the mills controlled by it, but it is also stated that the Crosby mill will not be one of the number.

SOUTHERN STATES.

Work on the new mill of the West Virginia Paper Company, Piedmont, W. Va., is in progress. The new building will be 190x250 feet.

Obituary.

HENRY GILES.

Henry Giles, head machinist of the Remington Paper Company, Watertown, N. Y., died this week of paralysis of the brain. Mr. Giles was well known in business circles as an inventor and a machinist of unusual skill. He was seventy years of age at the time of his death and had been in the employ of the Remingtons for four years. His early home was near Ithaca, N. Y., but later the family removed to Homer, also in this State, and here Mr. Giles was educated and apprenticed to the machinist's trade. He soon opened a machine shop and foundry of his own, and his inventive genius and remarkable skill as a machinist, which soon developed, gained him an enviable reputation. His skill has been recognized in several different places. He was appointed boiler inspector for Cortland County during Governor Cornell's administration and subsequently resided in Washington, Philadelphia, Pa., Elmira, N. Y., Binghamton, N. Y., and Sayre, Pa. At the last named place he was employed in the machine shops of the Lehigh Valley Railroad. His inventions include several well-known appliances used by paper makers, among them being an expanding mandril for paper machines and the paper rolls used in place of those made of iron. The work of perfecting this roll and extending its sale in foreign countries occupied the last few months of his life. Among other of his inventions from which he received royalties may be mentioned balanced slide valves for engines, automatic steam engine governors, locomotive valve gear, and a hoisting machine for elevators. His most notable invention, however, was the fish plate used for binding steel rails. A high tribute was paid to Mr. Giles' genius last summer by the Inventors' Institute of Paris, France, in the presentation of a gold medal of honor.

Three sons and two daughters survive the deceased: Julian A. Giles, of Oswego, superintendent of the Oswego Tool Company, also a noted inventor; Frank J. Giles, foreman of the foundry department of the Watertown Steam Engine Company; Bert H. Giles, of Watertown, erecting engines with the Steam Engine Company; Mrs. Chas. Frasier, of Homer, and Mrs. J. W. Royce, of Cortland. The funeral services were held from the residence of his son, F. J. Giles, and the interment took place at Homer.

PHILIP J. A. HARPER.

Philip Jacob Arcularius Harper, a former member of the firm of Harper & Brothers, died on March 6 at his home, the old Thorne mansion, Hempstead, L. I., of Bright's disease.

Mr. Harper was the eldest son of James Harper, one of the founders and the senior member of the firm of Harper & Brothers, who was at one time the mayor of New York. He was educated in a private school, and when eighteen years old he entered his father's employ, and in 1869 succeeded his father as a member of the firm. He remained an active member of the house until 1890, when he retired.

As an employer Mr. Harper was very generous, and never failed to show his appreciation of faithful service on the part of employees, and his deeds of charity were numberless and unostentatious.

Mr. Harper married Harriet Mead, daughter of Ralph Mead, in 1846. Mrs. Harper died in 1856. Mr. Harper in 1859 married Miss Augusta M. Thorne, of Hempstead, who survives him. He also leaves a son, James Harper, who is now a member of the publishing house.

Mr. Harper was elected a trustee of Hempstead village nine times, and served five years as president. During his incumbency as president he erected at his own expense buildings for the fire department of the village, and in many other ways manifested a public spirit of unusual munificence.

Mr. Harper was for twenty-five years treasurer of Morton Lodge No. 63, a Masonic organization of Hempstead, one of the oldest in the State. He was for many years an officer in the Methodist Episcopal Church. He was in early life a member of the choir of the John Street Church, New York, and was connected with it for a long time afterward.

JOHN MARKLE.

John Markle, a retired paper manufacturer, died at his residence in Roxborough, Philadelphia, on March 3, of general debility.

Mr. Markle was born on May 14, 1814, in Rittenhousetown, a settlement which formerly existed on the Wissahickon Creek, but which was obliterated when the site was added to Fairmount Park. His ancestors were among the early settlers of Germantown. He learned the paper making business with his father, George Markle, in the old Rittenhouse paper mill, the first in this country. He subsequently succeeded his father, and carried on the business until he began the manufacture of wire cloth used in paper making on Dock street. In 1850 Mr. Markle retired and devoted himself to Roxborough, to which place he had removed the year previous.

In 1846 he was married to Sarah M. Levering, daughter of John Levering, whose grandfather, Wiggard Levering, was one of the first settlers in Roxborough. Mrs. Markle died in 1883. Three children, a son and two daughters, survive him.

NAT W. PRATT.

Nat W. Pratt, president of the Babcock & Wilcox Company, died at his home in Brooklyn, N. Y., on March 10. He was born in Baltimore in 1852, and inherited from his father, William Pratt, those qualities which made him an important factor in the world of engineering and invention. At one time he was consulting engineer of the Dynamite Gun Company, and at the time of his death was a member of the American Society of Mechanical Engineers, the American Institute of Mining Engineers, the American Institute and the Engineers' Club of this city. An aged father and mother, a widow and three children survive him.

N. B. Fairclough, of Fairclough & Van Ness, manufacturers of paper boxes, Paterson, N. J., is dead.

Personals.

J. Marahs, who for several years has been employed as superintendent at the mill of the Mount Tom Sulphite Company, Mount Tom, Mass., will leave shortly for his native country, Austria, for the benefit of his health.

C. D. Brown, of C. D. Brown & Co., Boston, Mass., and Mrs. Brown will next week go to Dansville, N. Y., for a month's rest.

The "Hamilton" Felt.

"Best and Most Economical Made."

The Longest Runs

are always made with the "Hamilton." Once accustomed to its use, you will buy no other. Prices as low as inferior makes are sold at.

In ordering, mention kind of stock used, quality of paper made and speed of machine.

SHULER & BENNINGHOFEN,
HAMILTON, OHIO.

Ventilating Fans,
Paper Dryers,
Heating Apparatus,
Blowers and Engines.

AMERICAN BLOWER CO.,
SUCCESSORS TO
BUTTZ & SMITH MFG. CO.,
Detroit, Mich.

SEND FOR CATALOGUE.

Fires.

Charles W. Kirkley, paper dealer, Washington, D. C., has been burned out.

Jas. Bowes & Son, printers, Halifax, N. S., have been burned out. Insurance, $3,800.

Examiner McKinney, publisher, McKinney, Tex., has had a fire loss of $2,000; insurance, $1,500.

The stock of J. Otis McFadden, dealer in wall paper, Boston, Mass., has been damaged by fire to the extent of $4,000.

The printing office of Gillam Sons Company, Philadelphia, Pa., was damaged by fire on March 7. Insurance, $15,000.

Hawkins & Co., booksellers, stationers, &c., New Orleans, La., have been damaged by fire to the extent of $20,000; insurance, $5,000.

The *Ledger* Publishing Company, Mechanic Falls, Me., was burned out on February 27. The loss was $3,000; insured for $2,000.

Richard Herman & Co., printers and lithographers, 160 William street, New York, were damaged by fire on March 10. Insurance, $13,300.

The factory of Louis De Jonge & Co., coated paper manufacturers, Tompkinsville, N. Y., took fire on March 10. The flames were extinguished by the employees.

In addition to the insurance noted in last week's JOURNAL on the Peter Young bagging factory, Brooklyn, N. Y., burned last week, there is a further amount of $77,500, making a total of $147,500.

Henry Daniels & Brother, bookbinders, Philadelphia, Pa., were damaged by fire and water to the extent of $5,000 on March 7. The origin of the fire is unknown, but it is supposed to have started in a bin used for waste paper.

The Lartz Wall Paper Company, Chicago, Ill., a branch of the National Wall Paper Company, was damaged by fire on March 10. The total loss on building and contents, but principally on the high-grade stock of this company, will not exceed $40,000.

In Town.

Col. S. P. Train, G. W. Wheelwright and C. D. Brown, Boston, Mass.; E. F. Daniell, Franklin, N. H.; G. T. Keyes, East Pepperell, Mass., and D. G. Cahoon, Potsdam, N. Y.

General Notes.

F. H. Foss, dealer in books and stationery, &c., Dover, N. H., has been damaged by water to the extent of $5,000.

James Hennessy, who was formerly in the paper stock packing business, but who for several years past has been engaged in another line, will open up in his old trade in his building in City Hall place, New York, about May 1.

The Crocker Manufacturing Company, Holyoke, Mass., announces that it will make during the week or ten days succeeding March 16 its specialties in cover papers as follows: Robin's egg blue, Victoria green, primrose, straw, canary, fawn and corn. Orders should be sent in at once.

The 1896 edition of the Directory of Paper Makers of the United Kingdom has been issued by Marchant, Singer & Co., 47 St. Mary Axe, London, E. C. It gives as usual a full list of paper making firms, the names, numbers and location of mills, the character of product, London agents, watermarks, &c.

Some weeks ago reference was made in these columns to the placing of two Knowles vertical duplex, double acting, geared power suction box vacuum pumps in the Hollingsworth & Whitney Company's mills at Gardiner, Me. In regard to the working of these pumps the following letter received by the Knowles Steam Pump Works is presented as showing the satisfaction which the Knowles pumps always give:

OFFICE OF HOLLINGSWORTH & WHITNEY COMPANY
(Cobbossee Mills and Aroostook Mills),
GARDINER, Me.

Messrs. Knowles Steam Pump Works, 183 Devonshire Street, Boston, Mass.:

GENTLEMEN—In regard to the five 14x10 double acting double suction pumps which you furnished us, will say that they have been giving us first-class satisfaction. We have two of them running on our 135 inch machines, one of them on each machine handling four suction boxes, and they do the work, giving us all the suction we need.

We have found them well made, and the workmanship first class. You must know we like them very much, as we have given you a second order. Yours truly,

H. & W. Co.,
F. E., Boston Agent.

J. E. Rhoads & Sons, 239 Market street, Philadelphia, have added to their already full stock of oak tanned belting another style of belt. It is high grade, medium weight, short lap, oil treated and rivetless. It is their "Diamond State" brand. This firm recently made tests of its belting in comparison with some other high grade

The W. S. Tyler Wire Works Co.,
CLEVELAND, OHIO.
MANUFACTURERS OF
FOURDRINIER WIRES,
Cylinder Faces and Washer Wires.

THE GENERAL FIRE EXTINGUISHER COMPANY,
CONTROLLING THE INVENTIONS AND APPARATUS
PERTAINING TO AUTOMATIC SPRINKLERS OF
Frederick Grinnell, William Neracher, John Hill, William Kane and others.
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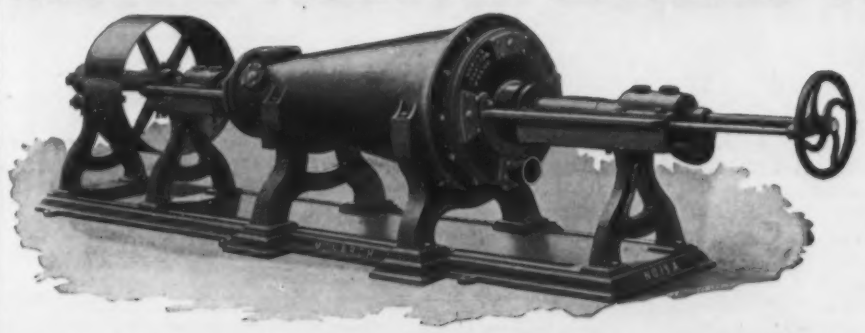
NEW YORK: 413 Broadway.
PHILADELPHIA: Mutual Life Building.
CHICAGO: Pullman Building.
CLEVELAND: Society for Savings Building.
BOSTON: 173 Devonshire Street.
BUFFALO: City Bank Building.
ST. LOUIS: Rialto Building
Also at WARREN, OHIO, and COLUMBUS, GA.
AND AT THE
EXECUTIVE OFFICES, PROVIDENCE, R. I.

NOBLE & JOHNSTON MACHINE CO., Hoosick Falls, N. Y.,
MANUFACTURERS OF



Paper Mill Machinery,
JORDAN and BEATING ENGINES,
IRON OR WOOD TUBS, LAID OR STEEL BARS AND KNIVES. BED PLATES AND JORDAN FILLINGS OF EVERY DESCRIPTION A SPECIALTY. Correspondence solicited.

makes, and the results are said to have clearly demonstrated that its "Gilt Edge Short Lap" belting is the peer of the very best brands both for tensile strength and minimized stretch. The firm is sparing no pains to maintain the standard of Rhoads belt as one that will certainly give satisfaction to all belt users.

I. H. Pratt, 677 "The Arcade," Cleveland, Ohio, reports business good in the sale of Corliss engines made by the Bales Machine Company, Joliet, Ill. This company manufactures simple, compound, triple expansion and condensing engines, and takes contracts for complete power plants.

Frank S. Noble has been appointed receiver of the N. Y. Aristotype Company, of Bloomfield, N. J., by Judge Beekman on the application of Paul Harrison, the treasurer of the company. Mr. Noble is the secretary of the company and is also president of the Ilotype Company, manufacturer of sensitive photo papers, with offices at 165 Pearl street, New York, and factory at Bloomfield, N. J. The company was incorporated in September, 1892, with a capital stock of $25,000, to manufacture photographic supplies. Land was purchased at Bloomfield and a factory erected there. The liabilities are $29,000 and nominal assets $35,400, of which $24,400 is tied up in the factory property and plant. The principal creditors are the Ilotype Company, $12,500; Frederick M. Harrison, $8,027, and the Bloomfield Bank, $3,000. Frederick M. Harrison is the principal stockholder, having $10,600 of the stock. The company's assets in this city consist of book accounts, $1,908. It is reported that F. M. Harrison has been appointed receiver of the Ilotype Company.

Properties of Coloring Matters.

The various coloring materials used in paper making may be classified into two divisions, viz.: Pigments and dyes. Pigments are generally mineral substances, ground into an exceedingly fine state of division, which, when placed in the beater, form an intimate mixture with the pulp and produce a colored or tinted sheet, not by virtue of any dyeing action upon the fibres, but by reason of their cohesion. Thus the physical qualities of the pigments as regards their degree of fineness, the specific gravity and the consequent percentage of retention are matters of considerable importance.

Although for coloring paper the use of soluble aniline dyes is fast superseding the use of insoluble pigments, the latter class of dyes possesses a peculiar advantage in the production of certain particular shades of toned papers. The pigments most commonly met with in the course of paper manufacture are yellow dyes, such as the ochres and chrome yellow, blue coloring matters of which ultramarine is the principal type; orange and red dyes like venetian red, indian red, &c., and sundry other colors, as green, umber, mineral black, &c. Most of these occur as dry powders, while some can be procured in a moist state under the name of "paste" colors.

The principal characteristics of pigments, which define their value, are freedom from grit, the fineness of the particles, their capacity for resisting the action of the various chemicals in the beating process, notably alum, and finally the actual tinctorial power possessed by each kind of dye. The fineness of the particles determines very largely the amount of dye actually retained in the paper. This fineness and the freedom from grit can be examined in all insoluble pigments by what is known as the "gravity" test.

A fairly large quantity of the pigment is carefully weighed out—about a quarter of a pound—and thoroughly stirred in a large glass or porcelain vessel with one-half gallon of water. This is allowed to stand for five minutes. The heaviest particles settle to the bottom, and the supernatant liquid, containing the major portion of the finer particles, is quickly poured off. The portion remaining at the bottom of the vessel should be again stirred with water and the milky liquid poured off a second time. If necessary, a third washing should be resorted to. The washing may be considered complete when the liquid appears almost clear after standing five minutes. The sediment should be carefully poured into a small glass vessel, dried and weighed. The weight calculated on the original amount taken gives the percentage of grit, and is a measure of the possible retention. A large amount of grit points to a poor retention of color, and hence a waste of material in accomplishing a desired effect.

Ultramarine is a complicated chemical substance, the true nature of which is not known. The constituents have been ascertained by analysis, but the way in which these are united in the mineral has yet to be discovered. It contains varying proportions of silica, sodium oxide, alumina and sulphur, the proportions probably fixing the tinctorial value of the dye, which varies greatly in different samples. This color is readily acted on by acids or bodies like alum, which possess an acid reaction. Mineral acids, such as sulphuric and hydrochloric acids, easily discharge its color, even when dilute. Alkalies have no action upon it. The value, therefore, of an ultramarine greatly depends upon its power of resisting alum. This value may be approximately determined by the following test:

To compare the alum resisting properties of any two or more samples mix equal quantities of the samples with water, using the same quantity of water in each case. Add to each an equal quantity of dilute alum solution, prepared from the ordinary mill supply of alum or aluminous cake, or, for special tests, from pure alum. The length of time required for the samples to fade down to a comparatively permanent color is a measure of the alum resisting power. It is convenient to have a similar set of samples mixed with water containing no alum for the sake of reference. The samples must be thoroughly stirred when examined for color, as the pigment settles at the bottom of the vessel.

Another plan consists in mixing the sample with pulp and water. In this way the necessity for stirring is done away with, as the color particles remain suspended in the pulp.

Prussian blue is a ferrocyanide of iron, which, when dry, is a bright blue powder possessing a brownish tint like copper. It is susceptible to the action of alkalies, but is unaffected by acids, in which peculiarity it differs from ultramarine. This color is often produced direct in the engine by adding first an iron salt, like ferric chloride or ferric sulphate, and afterward potassium ferrocyanide. Ferrocyanide of iron is precipitated as a blue dye upon the fibres, and produces a more permanent and even tint than the mere addition of the powder.

A mixture of Prussian blue and ultramarine may be detected by the following test: Warm the sample with fairly strong caustic soda and filter. The filtered liquid contains any Prussian blue which may be present in the mixture, and is detected by a deep blue precipitate (Prussian blue) formed on the addition of ferric chloride to the liquid. Before ferric chloride is poured in acid must be added in sufficient quantity to neutralize all the soda.

Chrome yellow is a neutral chromate of lead of a bright yellow color, insoluble in water and unaffected by acids. It is soluble in weak caustic soda, and any undissolved matter left may be regarded as an adulteration, if any large quantity is insoluble. It is sometimes precipitated direct upon the fibres by the successive addition of sugar of lead and a solution of bichromate of potash.

The name of ochre is given to a class of colors which can be obtained in almost any tint, from white to brownish red. The pigments are clays whose color is due to varying percentages of oxide of iron present in the mineral.

Venetian red is a sesquioxide of iron obtainable in various shades. It is almost completely soluble in dilute muriatic acid.

Paste colors, which are generally sold in a moist state, are more liable to adulteration than the dry powders. As the color of a paste is far darker than the dry color the adulteration cannot be detected by the eye alone. If a color is sold at 40 per cent. the percentage can be determined by the weight of residue left on drying a weighed quantity of the paste. Such possible adulterants as chalk, gypsum, starch, mineral white, &c., can only be detected by chemical analysis.

Aniline colors behave toward the fibres in a way totally distinct from the action of mineral pigments. While the latter adhere to the fibre by virtue of their cohesive properties, all soluble dyes, like carmine and the aniline colors, act upon and color each fibre, requiring precipitation by a mordant, *e. g.*, alum. Hence the effect produced is far greater and the retention is practically complete. A very simple test for insuring complete precipitation is as follows: Squeeze out a handful of the dyed pulp some little time after the addition of the coloring matter and alum. Place the moist pulp between two sheets of blotting paper. In the case of complete precipitation, the blotting paper becomes moist without being colored, whereas if the dye is in completely precipitated upon the pulp the blotting paper takes the color of the dye which is shown to be in solution. The aniline colors are generally grouped into acid and basic dyes. Acid colors are best developed by the use of a slight excess of alum, or by the addition of acetate of alumina. Basic colors, on the other hand, should not be treated with any excess of sulphate of alumina, and are considerably improved by the use of a little borax. Among the acid colors are orange, scarlet, red, blue, black dyes, such as quinoline, yellow, cotton scarlet, soluble blue, nigrosine. Among the basic colors are green, yellow, violet, purple, and certain blue colors, such as diamond green, auramine, methyl violet, marine blue.—*British and Colonial Printer and Stationer.*

Clearance and Compression.

I've been trying to get up to knowing just a little something about the effect of clearance and compression on the cylinder of a steam engine, but don't seem to get along very well in doing so; seem to stick on the centres, so to speak, like an old engine that doesn't know whether it's just the proper thing to go ahead or to go back and try it all over again. You've seen just such engines.

It seems to me to be easy enough—that is, for one who knows how—to prove anything he wants to prove on the subject; prove it by figures as easily as twice two are four. You can find figures kept in stock, or you can get them made to order, to prove, if you'll only believe, what a lot of humbug there is about clearance; doesn't amount to much if you've only got lots of compression. Compression just covers up the evil, or the most of it. This looks all right; seems all right for your old-fashioned, long ported engine till the other fellow comes along and shows by better figuring where the first figures are all wrong. Then comes along the man with the indicator. He joins in the hunt and declares that both are 'way out; just exactly wrong. Figures may go astray, but the indicator will not lie, and there's what it says. See? Finally some fellow borrows an engine, scales and a coal pile, and proves by avoirdupois that everybody else is wrong, and is never certain that he is anywhere near right. You see, Mr. Editor, it's a good deal easier to prove that everybody else is wrong than to prove that you yourself are right. Comes more natural like.

That's just about where I stand on the compression question at this writing. It's mighty hard finding anything you are willing to nail your faith right to, and you are apt to conclude that the man who doesn't know anything about compression and doesn't pretend to, but goes right along building a pretty good steam engine, is about as good authority as anyone. When you try to read up and study up the matter, things that ought to consist don't consist, seems to me. But we all bank on books, you know, rely on books and those who ponder over books.

You see, it was this way: The old man, Bildmake, had a nice little shop—making money—but was never just satisfied till he started in building a real automatic steam engine. Done the better class of steam engine repairs, the old man had, for all around for ten years or more, and two years ago just made up his mind that he could fill a long felt want by putting a genuine automatic engine on the market himself. Not an "astonisher" or an "eye opener," or anything of that sort, but something that should turn over right along just as a well conditioned steam engine ought to turn over.

The old man is one of the best men in the world. Wouldn't wrong even himself, not if he knew it, he wouldn't. He brought out a half dozen sizes of the new engine, none of them very large; just about right for the trade at Thereaway and the rest of the county; taking care of the local trade, he called it. He had looked after the shop pretty much himself, but now he had to have a draftsman—must have some drawings of the new engine. Then he had to have some one to help him around the shop. There was the general work of the shop to be looked after, which had been growing for some time, and the new engine to be looked after. This is how I have become interested in clearance, compression and the like. You can't build engines without clearance, but you can build them to run without any compression worth grumbling about.

The old man had several engines running, some of them just about as smooth as anybody could ask for, and others that rattled around rather vigorously; seemed to be trying to get away. The old man didn't have time to find out the reason, so he set me to help him in a sort of a way.

As I remarked, we all bank on books; even the old man when he started in on the new enterprise—automatic steam engines—bought a little library (sort of office library) of books on the steam engine, into which he never looked, not to anyone's knowledge; but when I pressed him on the subject of compression he just referred me right to the library, particularly recommending Rankine. Knew more about engines, Rankine did, in his day, than all the rest put together. Stay as late as you like Saturday afternoon, the old man said, and read up on the whole business. Learn something for yourself and something for the new engine.

I stayed as he advised, and just took down Rankine. Well, now, I could read just about as much of this as I could of Greek, just about; but I could read a plain statement, and I read that the most advantageous adjustment of compression is "when the quantity of steam confined or 'cushioned' is just sufficient to fill the clearance at the initial pressure."

That was plain enough, to be sure, but somehow you always want to see what some one else says. Sort of fortifies your ground; makes you feel safer like, I reckon. Then I found that other authorities quite disagreed with Rankine. Some of them gave formulas that no fellow like me could read, and altogether they left me right in a muddle.

Finally I came to the conclusion that if I were to decide for myself I would arrange to have compression in every one of the old man's engines up to three-quarters boiler pressure, and take the chances.

I wonder if some one or some society will not arrange for experiments that will finally settle the whole business; just let light in for the benefit of us who don't know anything about it, only by the operation of some particular engine we have to do with, and not much then; make it tell its own story that we don't know how to read at present.

George H. Corliss used to build steam engines, and the indicator fellows always said they didn't have compression enough for smooth running or good economy, didn't have any compression at all worth speaking of, perhaps, because there wasn't room in the valve gear for it, and probably because he didn't want it. Didn't talk much about his reasons—they say Mr. Corliss didn't—but he got together an engine that is rather hard to beat. Then other builders followed by jamming whatever was left in the cylinder right up against the boiler, but they never seemed to get away with Mr. Corliss very much.

Speaking about clearance, I know a builder who built an automatic that proved quite too large for the work, just as you have seen a good many engines, I suppose. Well, he bushed the cylinder down to about the right size; bushed it 'way down to where the terminal pressure didn't get all tangled up with the vacuum. Going to save coal, he thought, and everybody else would have thought the same. The cylinder was too large and was bushed to the right size, and the fireman had to wheel just as much coal as he did before.

I suppose the clearance was increased by the bushing—must have been. Wonder just what this had to do with it? Then there was less compression. Sort of at odds and ends the whole thing seems to be.—*John Lookaback in Machinery.*

Care of Isolated Electric Lighting Plants.

It has been said that some are born great, some achieve greatness, while some have greatness thrust upon them. There is a certain application of this quotation to those having charge of electric plants. A very few may have been born electricians, many have achieved the art of management, while others have had the responsibility thrust upon them in addition and supplementary to their other duties. The writer finds himself in the latter category, and with very interesting company. When you find a middle-aged man in such a position it will often be found to be a case of "have to." A very efficient superintendent of a certain gas and electric light company told me this was the reason why he "booked up" on electrical matters.

He was an educated gas engineer, but when his company absorbed the electric franchise he came into control, and studiously acquired the necessary technical knowledge for intelligently managing the electrical branches of the enterprise. Those for whom this paper is intended are, however, of that more numerous class who have to acquire the art of caring for and operating electrical apparatus, and who perhaps have little opportunity or inclination for becoming versed in the science upon which it is constructed.

To illustrate my idea of how a man who is about to have the care of such apparatus thrust upon him should "hold his mouth," I will copy part of a letter just written to a friend who is in that position, and who has asked me for advice and information.

"You are to install a lighting plant and wish to profit by my mistakes, which have been many and flagrant. It will be a good plan for you to visit all of the other plants in your vicinity and look up the mistakes in them, so you can learn how not to do certain things. It is just as necessary to know the rocks as the deep water in a channel you are about to navigate. Divest your mind of the idea that there is any mystery about operating the dynamos and simply use your horse sense in everything you run up against. Don't try to fathom the science of it; Edison nor Tesla haven't done that yet; just acquire the art of making the thing go right, and when you can do that well, you will see more into the reasons why you do certain things, and why desired results follow.

"Put the belts on to the machines and run them just as you would any other piece of mechanical apparatus of similar weight and speed. If fields are not connected and the brushes not in contact with the commutator, the dynamo is simply a machine and you know as much about running it as any electrician. The man who is to set up the apparatus will show you all about adjusting brushes, &c.; that is, if he is a square man and is not looking for an opening to run the plant himself. Symptoms of this would be an air of mystery, the use of technical language, and oft-repeated stories of disaster to other plants.

"Don't get rattled at all the wires, cables and instruments at the switchboard; they are all useful and most of them absolutely necessary, and they are no more complicated than the piping about your plant, with which you are so familiar as to almost invite contempt.

"You will find that there is an armature made to revolve between two or more 'fields,' and that as the latter become magnetized they have an attraction that tends to hold the armature from turning, but the belt knows a 'good thing' and 'pushes it along,' thus generating current which the winding carries to the commutator, where it is picked off by the brushes and passed along to the circuit. If your circuit is kept whole and the machine in good order, there is less need of trouble with it than with a buzz saw.

"Don't be afraid of the brown gloss on your commutator; it is better than raw copper. Read all of the best mechanical papers and catch on to all the kinks you can."

The above was written to a plain, common-sense and conscientious engineer. He will be all right; he understands handling machinery and will acquire the art of caring for his new installation.

What follows regarding dynamos and their use is mostly mechanical, although mechanical effects can be produced by electrical action.

Commutators will get cut and worn until sandpapering will no longer suffice, and they must be turned. To do this, either the whole shaft must be taken to a lathe, or the commutator must be disconnected and turned on an arbor, or there must be appliances for turning it off in position. To take out an armature shaft means more or less work, according to the size and design of the machine. In some makes the designer seems to have neglected to provide any decent means for such work, while in others even efficiency is sacrificed to ease of dismemberment. To take the commutator from the armature and replace it correctly requires skill. It can be turned apparently true on an arbor, but when it is put back every imperfection of lathe and arbor will be multiplied, and the "latter state" of that commutator will be worse than the first. Turning off in position, however, leaves nothing to be wished for if properly done, but to do it properly there is required something besides a chasing tool and a gas pipe rest. Briefly, the requirements are a slide rest, the right speed, and the "know how." The last requirement includes the second, but does not provide the tools. Most builders can furnish, if required, slide rests specially made to clamp onto the base or frame of their dynamos so as to bring the tool post to the proper position for doing the work. If a special rig is not to be had, the slide rest and tool post can be taken from a lathe, and fastened to a plank bolted to the frame, and in connection with the "know how" a good job can be done.

Many electric light engines cannot be run slow enough with the regular pulleys to properly turn a commutator. Different methods will suggest themselves for accomplishing this purpose, as, for instance, a small engine that can be quickly bolted to the floor opposite the dynamo and having a small pulley on the crank shaft belted directly to the dynamo pulley. A 3x5 upright weighing only about 100 pounds will do the work all right. A few feet of steam hose is very convenient for making easy and quick connections to some nearby steam pipe. In some cases a length of light shaft can be erected and pulleys arranged so that the regular engine can be run slow enough to do the work.

For a commutator 8 inches in diameter a speed of 50 revolutions per minute will answer well. The tool must be very hard and sharp to cleanly cut the soft copper and hard mica insulation, as a dull tool will pull the copper across from one segment to the next. I have also found it better to turn the commutator in the direction opposite to that in which it regularly runs, for then the sharp tool will better get under and pare off any thin places there may be where the brushes have spun the metal into and across the insulation. After the commutator is turned true, take a float file and draw lengthwise of the segments over the lines of mica. This will remove any little particles of copper that may have lodged between them. Some use fine sandpaper after truing and draw filing, but if the copper is clean I see no good reason for this. Of course, there should be as little metal removed as will get the commutator true, for, like the water that has passed the mill, the lamps will never light with the copper that has gone.—*Peter H. Bullock, in American Machinist.*

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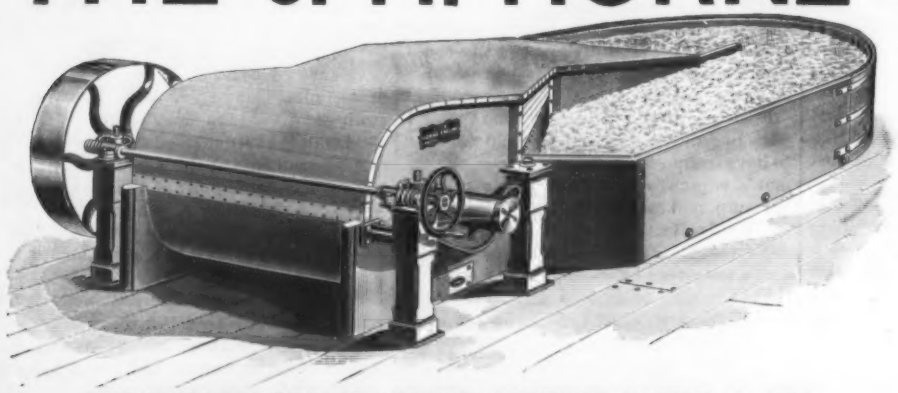

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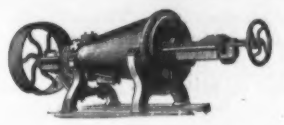

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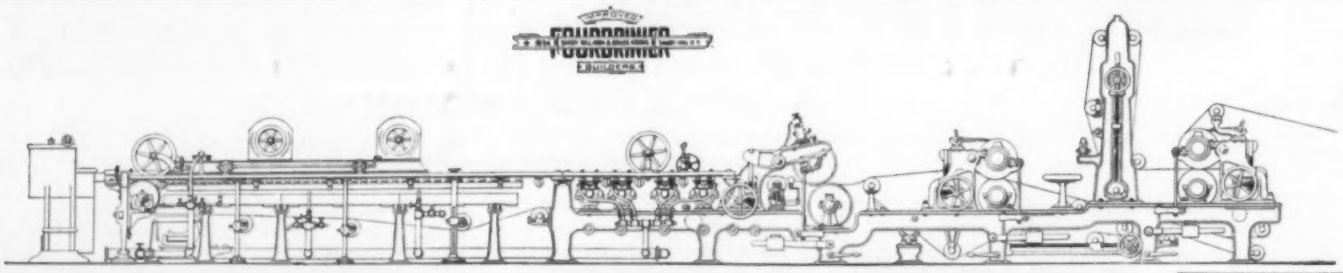

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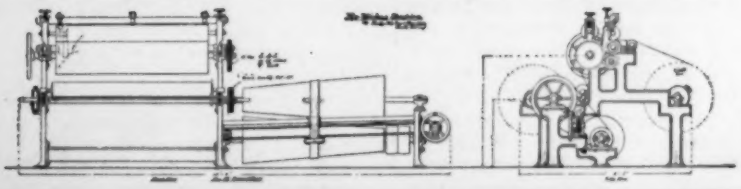

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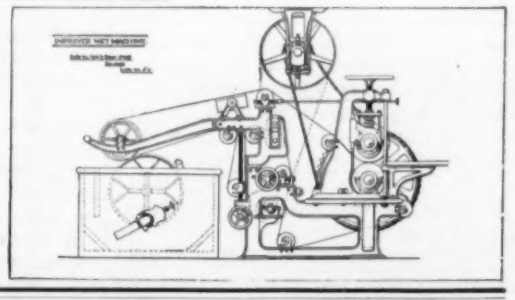

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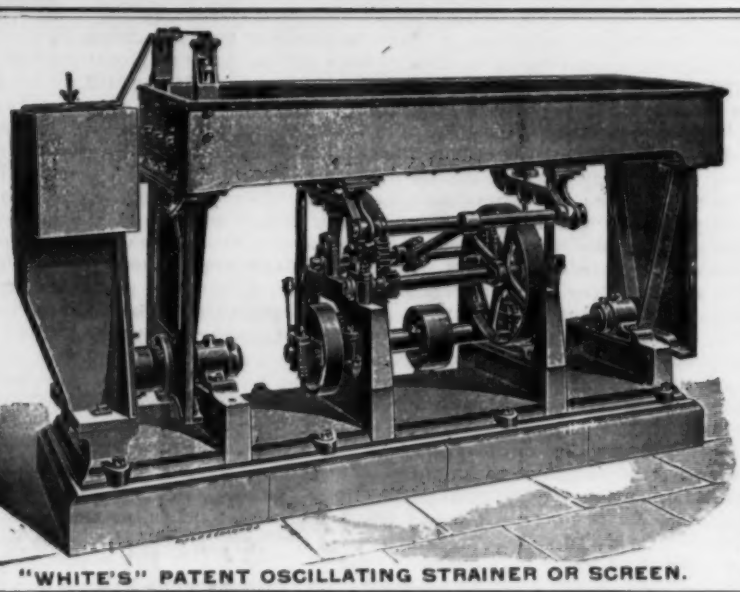

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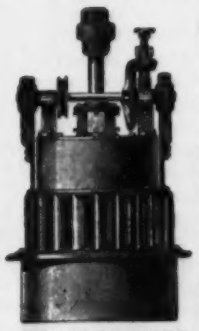

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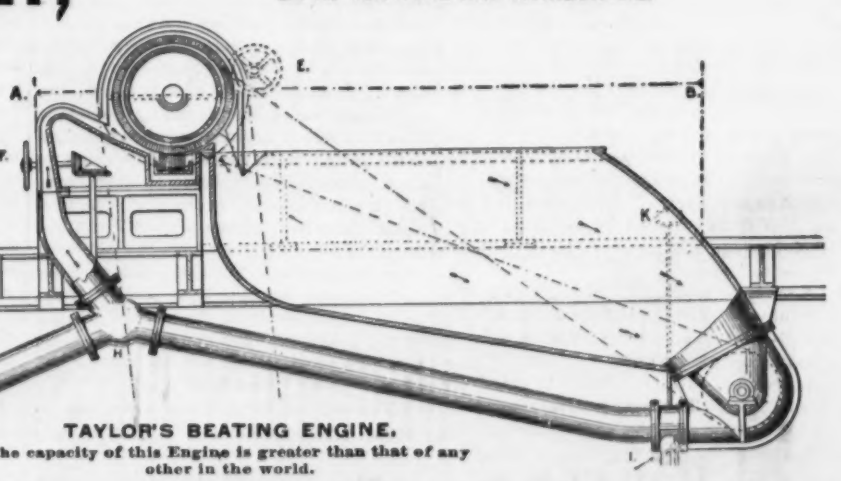

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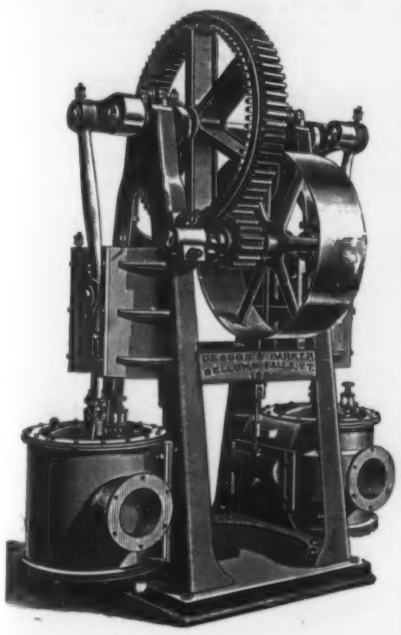

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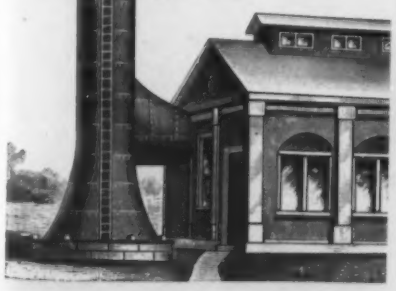

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FROM SIX TO SIXTY-SIX INCHES DIAMETER.
Are in practical operation under heads from 4 to 100 feet head; are strong, durable and give high efficiency.

BEATING ENGINES
Cast Iron or Wood Tubs.
Made heavy and strong, double lightered, with well made Cone Washers.

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Successors to
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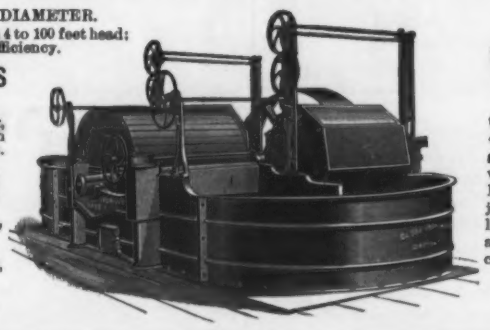

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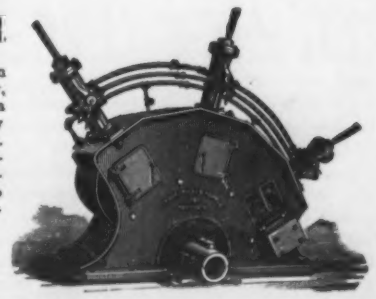
WOOD PULP GRINDER.

Superior in construction to any made. Capacity, 4,000 to 6,500 pounds extra good pulp per day, dry weight, per each grinder. Hydraulic feeds, fine adjustments; strong and reliable in every way. Two and three pocket machines.

Descriptive Catalogue Sent Free.



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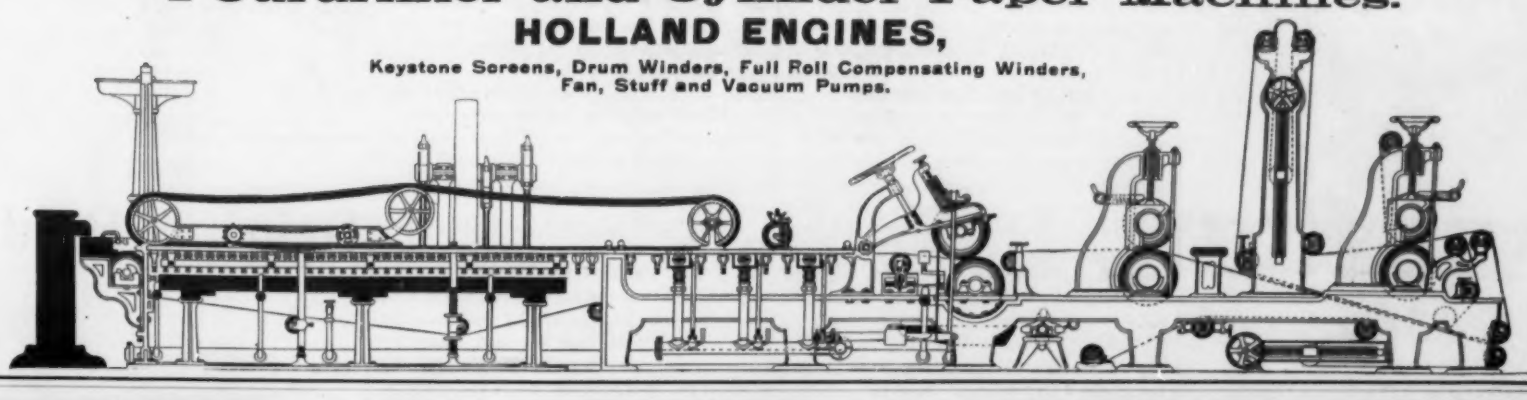

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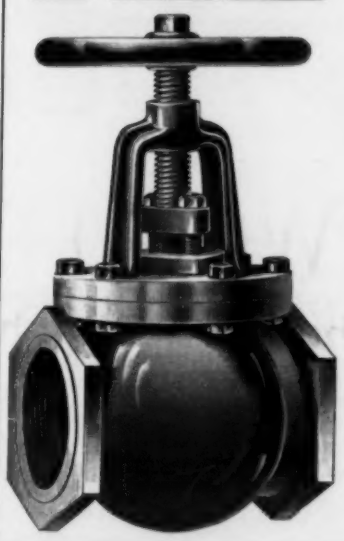

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The Discs are made of Vulcanized Asbestos, the toughest and most refractory material ever applied to this use. They are easily renewable and are without nuts, bolts or pins to work loose.

WHY NOT LET THE DISC TAKE THE WEAR AND RENEW IT AT SMALL COST WHEN REQUIRED?

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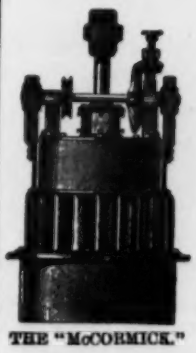

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McCORMICK AND SUCCESS TURBINES,

VERTICAL OR HORIZONTAL.

The McCORMICK Turbine gives more power per diameter with a higher percentage of useful effect from the water used than any other water wheel heretofore made. All sizes, both right and left hand, tested in the Holyoke testing flume.

The SUCCESS Turbine, long and favorably known in the paper trade as a first-class water wheel, possesses valuable features found in no other turbine, and gives a high percentage of useful effect from the water used.

THE McCORMICK and SUCCESS TURBINES are especially adapted for driving Paper and Pulp Mills and are extensively used by the largest manufacturers in the United States and Canada. Parties using wheels which are unsatisfactory and those contemplating the improvement of powers will find it to their interest to confer with me, as I am willing to guarantee results where others have failed, no matter what make of turbines has been tried.

State requirements and send for catalogue.

Heavy Power Transmitting Machinery a Specialty.

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Machines for Slitting and Rewinding Roll Paper.

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This Justly Celebrated Wheel is built in Many Styles and Designs on

UPRIGHT AND HORIZONTAL SHAFTS.

SPECIALLY DESIGNED and ADAPTED for Driving

PAPER and PULP MILL POWER PLANTS.

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—Thorough Inspection.—
Insurance against loss or damage to property; also against loss of life and injury by Steam Boiler Explosions.

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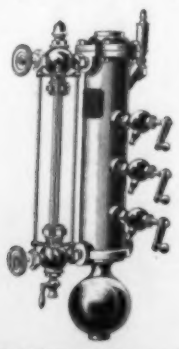
"Reliance" Safety Water Column.

The value of a safety water column hinges, it is said, upon the fact that it causes the water to be carried steadily at the proper level, and steam users have a check on and not an aid to the fireman.

Where it is used carelessness and negligence with regard to the water in a steam boiler are rendered impossible without the knowledge and consent of those in authority. This being the case, personal pride on one hand, and discipline on the other, insure the carrying of the water at the middle gauge cock, midway between the alarms, which are at the extreme gauge cocks, and this is the point at which it should be carried in order to secure the most economical results and the greatest safety to both the engine and the boilers.

Its use enables the steam user to know that the water is carried within the prescribed limits, instead of merely supposing that such is the case, and enables him to establish a degree of regularity in handling



"Reliance" Safety Water Column.

the water that very seldom, if ever, exists where only ordinary precautions are taken.

The following, therefore, are some of the reasons on which the claims that "the 'Reliance' columns are an incomparable investment"; that "they repay 100 per cent. per annum on the investment"; that "it is getting along without them that is expensive"; that "it costs nothing to get the protection to life and property which they afford," &c., are based:

First—With proper care and steady water a boiler, instead of being short lived, is practically indestructible. Without steady water it is racked and strained, and gradually worn out by repeated expansion and contraction. It follows that it will last several years longer if relieved of this strain by having the water carried "steady to a dot" at the proper level. Boilers are expensive, and if their life is prolonged one-fourth the appliance which prolongs it is worth in cash 25 per cent. of the original cost of the boiler. This of itself, in most cases, aggregates probably ten times the cost of the column.

Second—A boiler in which the water is carried "steady to a dot" at the proper level, if kept clean, has no leaky tubes, no burned sheets, and no expensive repairs are necessary. Since the columns cost so little, the steam user does not have to miss many repair bills to save 100 per cent. per annum on the investment from this source alone.

Third—Steam separators are all right, and the "Reliance" steam separator is the best of all, but the best and by all odds the cheapest place to separate the water from the steam is in the boiler. The water "steady to a dot" at the proper level means proper steam space, and this means dryer steam and less water heated to no purpose, and consequently less waste of fuel. This saving may be small, but no practical man can doubt that there is some saving. If it is as small as 5 cents per day per boiler, the aggregate from this source alone is about 75 per cent. per annum on the investment.

Fourth—With the water carried "steady to a dot" at the proper level the engine is fully protected from the danger of overflows. This protection is worth money to the steam user, and if the whole cost of the "Reliance" column was charged up to this source or put into the form of insurance against damage from high water, the premium would amount to about $1 per year per boiler, and the protection would be so cheap, even if all the other advantages were ignored, as to justify the purchase of the columns.

Fifth—The protection against boiler explosions which is afforded by the columns which cause the water to be carried "steady to a dot" is of intrinsic value to the steam user. It has been estimated that the average boiler explosion costs $3,000 and a fraction over two lives, while some explosions, as for instance, that at Shamokin, Pa., in which the explosion of twenty-seven boilers was attributed by the Hartford Steam Boiler Inspection and Insurance Company's examiner to "repeated expansion and contraction," cost many times that amount, the damage in this case being estimated at $100,000.

There is a legal phase to this question, too, which is important. The courts hold that the employer is under obligation to protect his employees, in so far as possible, from all danger, and this fact adds to the value of the appliance as a safeguard. It would be well to meditate upon this point.

The "Reliance" safety water column is said to be the only appliance for the purpose ever yet offered to the steam user which has had sufficient merit to bring it into general use. All others are said to have failed from one cause or another; many because the floats were unreliable. The "Reliance" floats, it is claimed, are the only floats so far offered which successfully withstand high pressure without filling with water. Less than 2 per cent. of them fail. These floats are not used in any other water column. Some have failed on account of complicated parts which become corroded and inoperative. The "Reliance" columns have no such parts. Others have failed on account of the position and construction of the valves which collect instead of avoiding sediment and become stopped up and useless. Such appliances are offered to-day at lower prices in competition with the "Reliance," but they are dear at any price.

The "Reliance" columns are made on mechanical lines. Correct in principle, they are made of proper proportions and are not only well made, but correctly made and excessively strong. There is no trouble with the valves, which are never stopped with sediment, owing to their construction and to the sediment chamber, which protects alike the valves and the glass, which is always clean. No other column has a sediment chamber; there is no trouble with the gaskets; the flanges are wide and the bolts excessively strong and plenty of them.

The "Reliance" columns have been in use over ten years, and over 30,000 are in operation. There can be no stronger evidence of their success.

The low water alarms may be selected on general principles by the relative dimensions of the columns and the boilers on which they are to be used, but the combined high and low water alarms must be selected in accordance with the fluctuations of the water in the boilers. In other words, there must be a sufficient distance between the high and low water alarms to cover the natural and proper fluctuations of the water in practical use without blowing the whistle, which is as sure to blow whenever the water line reaches either of the extreme gauge cocks as it is to remain quiet while it is between these prescribed limits. Care should be taken to not select columns of too narrow variation, for obvious reasons. In selecting columns for boilers already in use it is ordinarily safe to measure the distance between the extreme gauge cocks, and then select columns having gauge cocks a like distance apart. The material, workmanship and finish of the "Reliance" columns are guaranteed to be first class, and they are unequivocally guaranteed to work perfectly.

Economy, as practiced by many people in the present age, consists simply in buying only what is absolutely necessary. Such economy instead of being the road to wealth is a short cut to the poor house. True economy consists largely in investing wisely. A man who will not buy anything adaptable to his business, which will pay for itself in a year and last several years, or in other words repay 100 per cent. per annum on its cost, is responsible for the poverty of which he complains, and for the failure which awaits him. In any such case it is far more wise to borrow money to pay for the appliance than "to get along without it." Money is obtainable at 6 or 7 per cent. per annum, and the saving will quickly repay the principal, leaving the appliance paid for and thereafter enriching the man who bought it.

Managers, superintendents and engineers are paid for making wise expenditures which increase or better the output or reduce operating expenses, and their success is measured by the net results of their management. By the net earnings, not by the expenses. Give capital good dividends and you will hear no complaint. A saving of 100 per cent. on a $100 investment in "Reliance" columns is said to pay an 8 per cent. dividend on $1,250 of capital stock. That is the common sense way to look at improvements.

No man who owns a steam plant, no matter how poor he may be, can afford to have the life of his boilers shortened, have fuel wasted, and pay for repairs which would be obviated by the use of the columns, and needlessly jeopardize life and property, when protection can be had so cheaply. No competent manager is ever too poor to economize.

For further information address the Reliance Gauge Company, sole manufacturer, Euclid Crossing, Cleveland, Ohio.

The Bridge Wall of the Boiler.

The slope advisable for the bridge wall of a boiler is about 35° from the perpendicular. Fire brick will, of course, be employed for facing. From 12 to 14 inches from the top wall to the boiler shell is correct. The strength of the wall will, of course, be governed by the thickness, character of the cement, general planning and workmanship. The grates should be of ample proportions so as to obviate the necessity of crowding the fires. For a 76 inch boiler about 34 square feet of grate will be required. The grate area depends some on the shape of the furnace. Long, narrow grates are not so popular now, owing to the difficulty in getting at the rear portions. The other extreme has to be looked out for, otherwise the combustion element will be lacking. A furnace width about 8 inches wider than the diameter of the boiler and grate bars about 5 feet long are good proportions.

Boxing a Fly Wheel.

A friend of one of our correspondents has been boxing in his large fly wheel, and claims that he saves considerable power by doing so. The correspondent is inclined to deride the claim and considers the boxing a needless expense.

An unboxed fly wheel acts as a centrifugal air pump or fan. Air flows into the wheel at the centre, and is thrown off at the rim. Power is consumed in imparting motion to this air, just as it would be in pumping it by any other means. When the valve is closed on a centrifugal pump the consumption of power ceases, beyond that necessary to revolve the shaft in its bearings and overcome the friction of the fluid which has been shut in. A close casing about the wheel might be expected to reduce this fan action, and thus reduce the work of turning the wheel. On the other hand, the fan action may be usefully applied. We know of a case where the air is taken from the outer edge of a fly wheel casing and conducted through a coil heater into the mill, the excess of pressure at the rim casing being sufficient for the purpose. Of course in this case a central opening is necessary, whereas if the casing is to save power it should be made as tight as possible about the centre.—*Power.*

Colored Mosaics of Wood Pulp.

The preparation of wood pulp for the manufacture of colored mosaics intended for floors is now proposed by Gutwasser, of Königsberg. The peculiarity of the process in this case consists in the fact that the particles of the different varieties of wood are treated separately, so that the natural color of the wood itself is brought into prominence. Dyes, too, dissolved in alcohol are mixed with a shellac solution before the wood particles are coated, these being first colored with dyes dissolved in water, and allowed to dry thoroughly before being coated with the shellac solution. For simple floors, he states, it suffices that the mosaics be manufactured of different colors, changing them at pleasure, and in this way forming an assortment of colors. In the production of pattern or fancy wood mosaics, pattern molds of the required design, divided into fields and figures, are fitted into the plain mold; each section of the design is filled with the dyed wood pulp, the pattern molder moved, and then the whole, thus outlined, is subjected to heat and pressure, the result being a perfect varicolored fancy mosaic possessing great hardness and resisting qualities.

When a building is heated by the indirect radiation system, the radiators are not in the rooms to be heated, but are located elsewhere. The air is forced through them, and after it is heated it goes into the rooms to be warmed. A system of ventilation must of necessity be a part of the plan.

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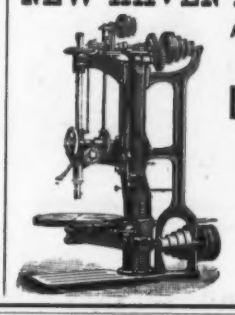

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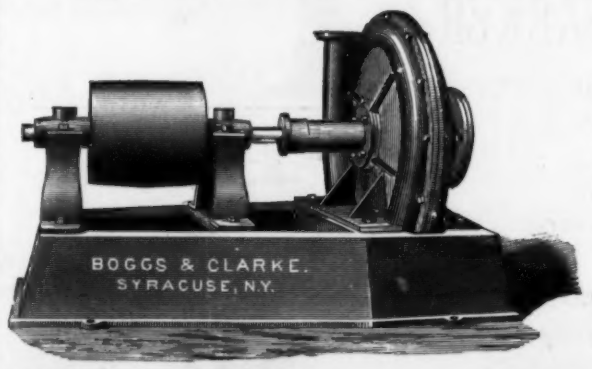

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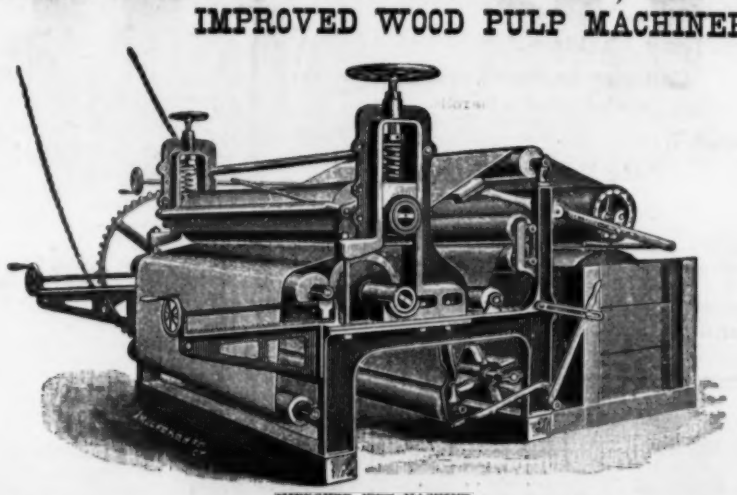
IMPROVED WOOD PULP MACHINERY.



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"Niagara" Grinders, Double and Single Splitters, the "Trevor" Improved Wet Machines, "1890" and "Giant" Barkers, Cross Sawing Machines, Drag Saw Machines, Improved Wood Slabbing and Sawing Machines, Knot Borers, Stuff Pumps, Double and Triple Pumps, for general use in Pulp and Paper Mills.

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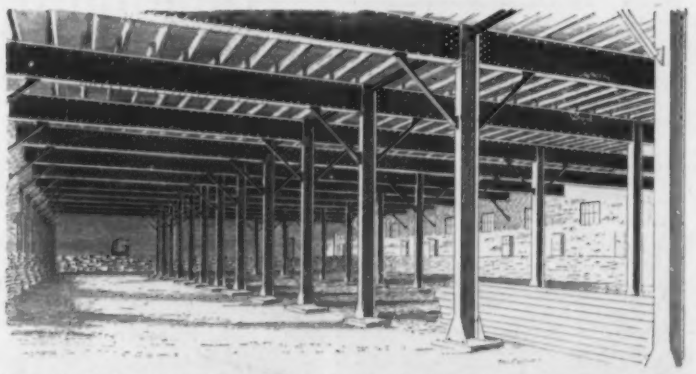

THE above illustration (taken direct from a photograph) shows the construction adopted by us for heavy floors in Pulp and Paper Mills, Machine Shops, Elevators, &c., where the floor loads are very excessive. Heavy iron girders, supported by iron posts, extend across the building, carrying the floor joist. To support the ends of these girders we often use iron posts placed in the brick side walls. Where loads are excessive and the width of the building is extreme this construction particularly commends itself.

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THE ESTY AUTOMATIC SPRINKLER

FULL SIZE.

Has been OFFICIALLY approved and accepted by the

ASSOCIATED FACTORY MUTUAL INSURANCE COMPANIES, THE FACTORY IMPROVEMENT COMMITTEE OF THE NEW ENGLAND INSURANCE EXCHANGE, THE NEW YORK BOARD OF FIRE UNDERWRITERS and others, and fully complies with the latest standard requirements of all other Boards or Combinations of Fire Underwriters throughout the United States.

The most simple in construction; the most **Sensitive to Heat.** A fusible solder joint projects from the centre—therefore more accessible to **Sudden Fire.** Will stand more **abuse** from **violence** than any other Sprinkler. The most **Effective Distributor** of water, whether used **Upright** or **Pendent.**

A MICA SEATED VALVE is used, non-corrodible, non-adhesive, impenetrable and imperishable. Can be **Reseated** without being removed. Can also be opened and examined by **Insurance Inspectors** like other fire apparatus, which is a great **advantage** over all other sprinklers.

PRICE, - 60 CENTS.

For any information concerning Sprinkler Service apply to

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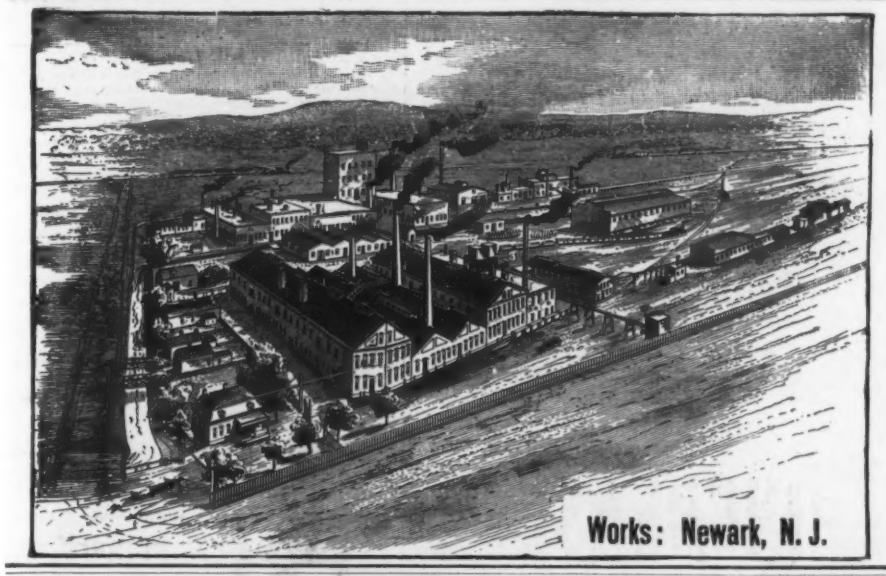
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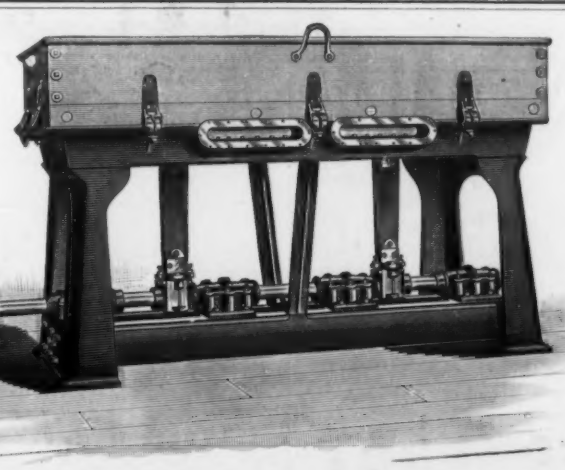
SUPERIOR QUALITIES.

Aniline Colors of all Shades. Samples Matched.



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Agents for the *Brokaw Patent Acid Plant* for Sulphite Mills, which makes as much acid in hot as in cold weather and always makes a uniform acid, which insures a uniform quality of pulp, and is simple to operate.

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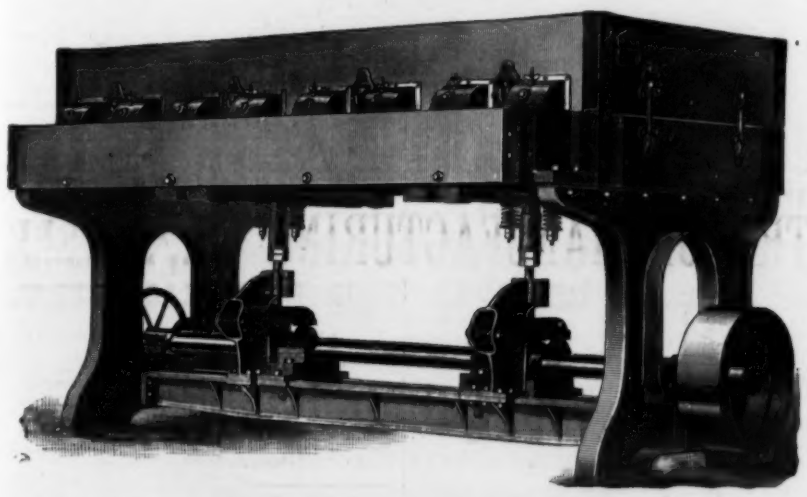

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Occupies a small space; a simple, solid built flooring the only foundation necessary.

Six (6) hours' time only required to put in position ready for work.

Excellent work accomplished with eight (8) plates and 11-1000 screen plate.

In ordering the Screens no particulars are required.

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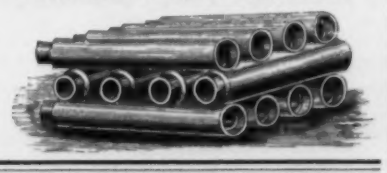

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For changing and regulating the speeds of machines. The speed can be easily varied while the machine is running. Thousands of these Pulleys are in operation, driving all kinds of machinery from 1 to 40 Horse Power.

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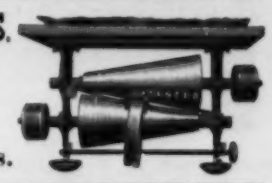

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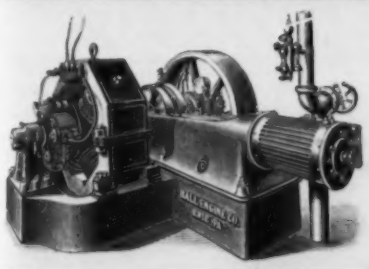

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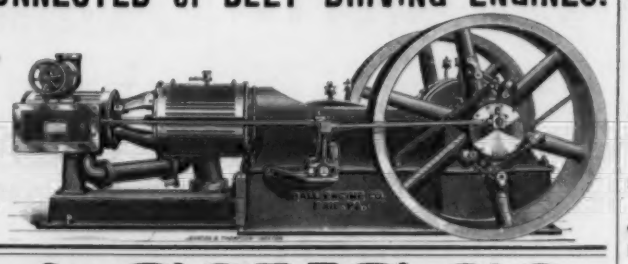

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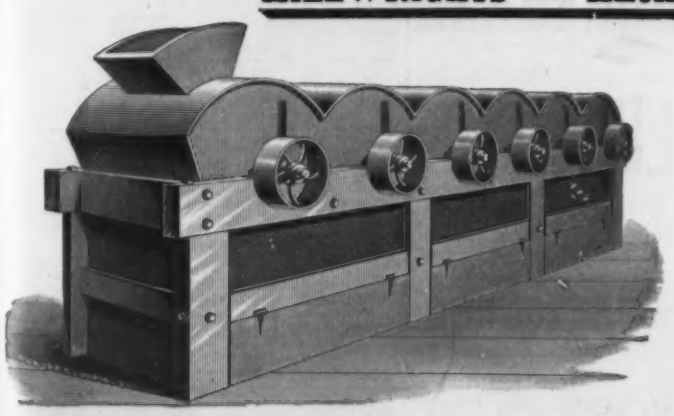

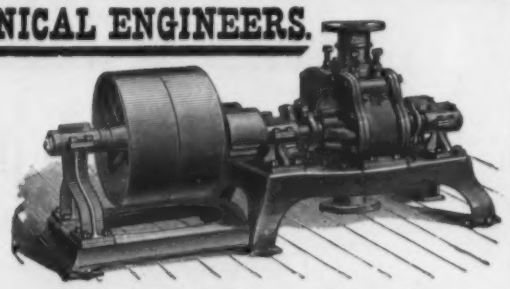

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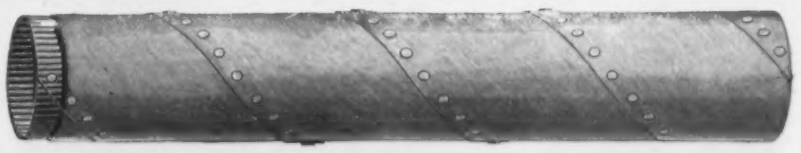

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Quite recently Carl Wegener has brought out a new process for utilizing powdered coal. He has proceeded on the idea of using chimney draught alone, without the aid of a fan, and so far has worked on other lines than those who preceded him in this matter. His apparatus is exceedingly simple. Coal ground to pass through a sieve of sixty meshes to the linear inch is tipped into the hopper at the top, whence it falls upon a grating, by which it is retained. This grating is subject to continual knocking, which keeps the coal dust falling through it. The air enters here under the influence of the chimney draught, and passing through the wheel puts it in rotation. The shaft of the wheel is continued upward to the grating, where it operates the knocker 150 to 200 times a minute. The knocker can be regulated by means of a screw and a spring, and the amount of coal passing can be varied between very wide limits. The coal dust in falling meets the rising air currents and both are diverted through the side pipe into the furnace. The air can be regulated by raising and lowering the end of the air pipe, which serves as a damper. The second pipe provides for the admission of a supplementary air current when required. The interior of the furnace is lined with fire brick for a length of 10 or 12 feet, and has in addition two fire brick bridges. There is no grate and there are no fire doors, the combustion being watched through peepholes.

Several of these furnaces have been working in Berlin for a year or so, and last spring Mr. Bryan Donkin made a test there of a Cornish boiler, fired first by hand, and a few days later by the same coal in a powdered condition. The boiler was 5 feet 7 inches in diameter by 28 feet 4 inches long, with one flue 2 feet 7½ inches in diameter. The total heating surface was 500 square feet, and the grate surface 13.8 square feet. The first experiment was made with very small English flaming coal (about one-eighth inch pieces). The fire bars were three-quarters of an inch wide, with five-sixteenth of an inch air spaces, and were not well suited for the kind of fuel under test. The results show that the dry powdered coal evaporated from the water at 212° 9.12 pounds of water per pound of dry coal, as against 6.48 pounds for the hand stoking. The latter result is, however, so poor—owing to the condition of the grate—that it cannot be taken as a proper basis of comparison. Nevertheless the trials show that the Wegener system can give economical results, especially with small and cheap coal. The cost of grinding is said to be about 10 per cent. of the value of the coal. —*Engineering.*

New Issues in Politics.

Hitherto the party divisions of the people of the United States have been built to too great an extent upon issues formulated by politicians, dealing largely in traditional sentiment and party loyalty. Old "dead and gone" political party war cries have served the purpose of dividing the people and creating partisanship and political animosities, which have no bearing upon the live issues of the day, and which are created for the purpose of blinding the people to the moral cowardice and indifference to the public welfare of the political leaders. As a consequence, the interests of the people are slighted; the issues which ought to be presented are ignored. In an effort to straddle and gain political advantage at the polls, the speeches of the party leaders are filled with vague commonplaces and sham sentiments of patriotism, which are a mockery to the sincere and earnest patriot and public spirited voter.

It is becoming evident that this state of things cannot continue much longer. People everywhere are inquiring "What are the uses of parties and party loyalty unless these are instruments to secure good government and to protect the citizen against harmful and oppressive legislation?" Politicians will find it more and more difficult to rally the public to a standard which has nothing but a name and a tradition to recommend it. The party must stand for more than a sentimental shibboleth. The interests of the people of this country are wide and diversified, and involve the bread and butter, the clothing and lodging, the present and prospective welfare of millions of families; the mothers, wives, daughters and infants of the laboring masses of our countrymen.

The welfare of the people is inseparable from their business interests, the work by which they get their daily bread, and the operations of commerce, by which the prosperity of the country is determined and carried forward. There is a growth of public sentiment in the direction of making politics more practical, of exacting more knowledge and judgment in dealing with the business interests of the country from our representatives in the legislative chambers of the States and nation.

In this number of the *Ledger* we publish a protest against a bill which has been introduced in Congress affecting postage on second-class mail matter, which, if enacted, will work great hardship to large commercial interests and deprive tens of thousands of their present means of support; which will materially lessen the commerce and inter-communication of the country, and deprive people of remote districts and small towns of hundreds of conveniences which they have hitherto enjoyed, and which, therefore, calls for unanimous and general condemnation. It is such legislation as is proposed, affecting our postal arrangements, which brings reproach to representative institutions, and which calls loudly for more general knowledge of the interests and wants of the mercantile community on the part of our parties and legislators—*New York Ledger.*

The angle of the belt should not exceed 45°, and the belt should be made to move from the top of the driving pulley to the top of the pulley being driven. A single belt should not be subjected to a strain of more than 3,000 pounds to the square inch of cross section, say 50 pounds for every square inch in width.

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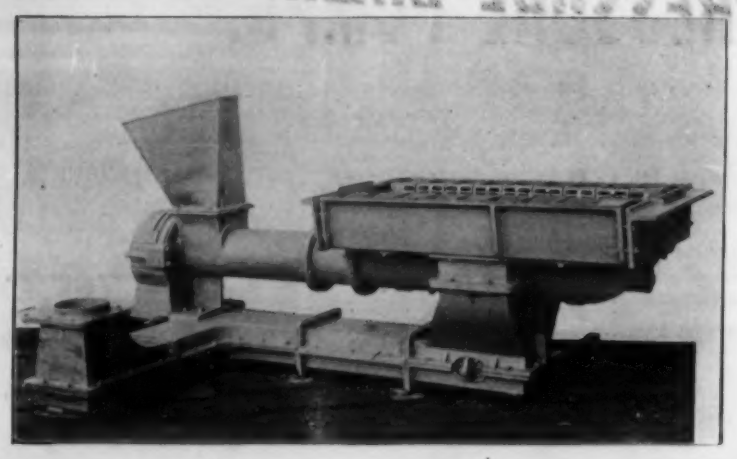

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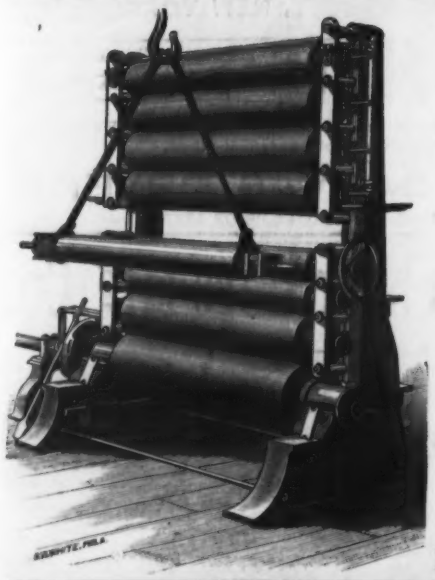

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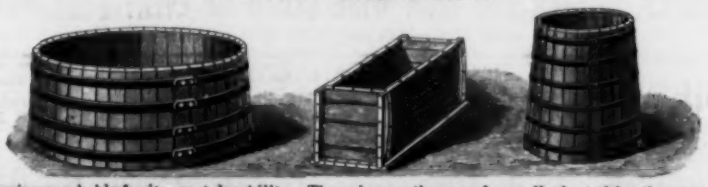

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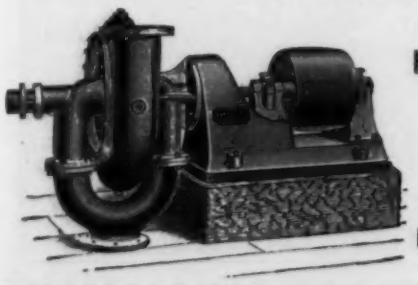

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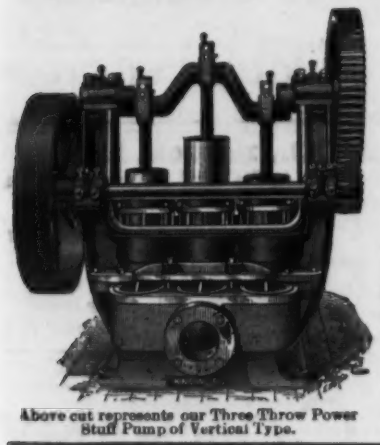

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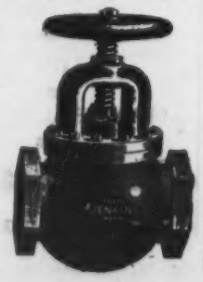

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As years passed it became *the* standard work, and for the past decade copies have sold at large prices, often as high as $30 each, and occasionally for more money. The original book consisted of 422 pages, 8¼ by 11 inches in size.

Mr. Hofmann returned to Germany more than eighteen years ago and settled in Berlin. He established *The Papier Zeitung*, and in due course, about seven years ago, began to write his second and latest Treatise. Thus far he has printed and published probably 1,200 pages in German, and in parts of forty-eight pages, including cover, profusely illustrated by wood cuts. When finished the book will consist of about 1,600 pages (pages size same as in first book), illustrated by 1,500 wood cuts.

We have contracted to translate and publish the work in English in twenty parts, of about eighty pages each, at intervals of not less than sixty days, and at a cost of *one dollar each, in advance, for each and every part.* When the enterprise is completed the twenty parts will sell, *unbound*, for *twenty dollars.* The binding will be extra. Subscribers can themselves have the parts bound, or have us bind them at extra expense; but it should be noted that no money will be saved by waiting until THE TREATISE is completed and bound.

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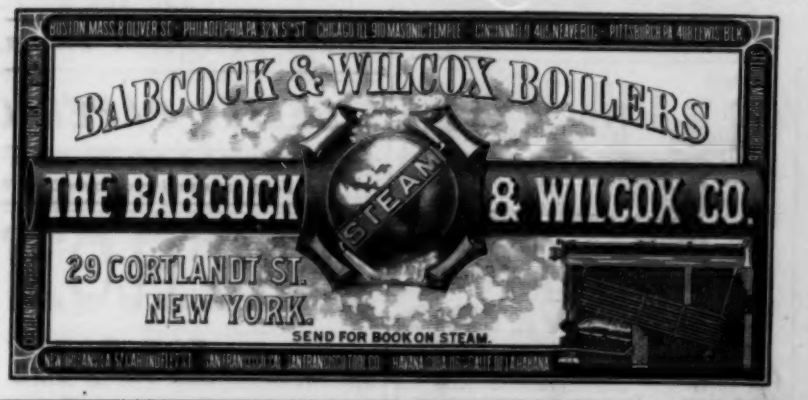
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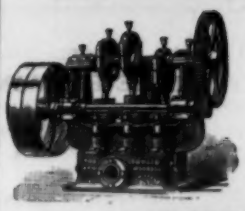

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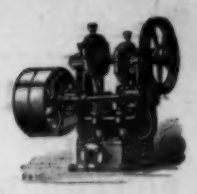

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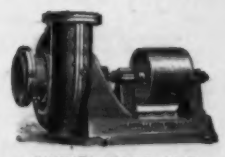

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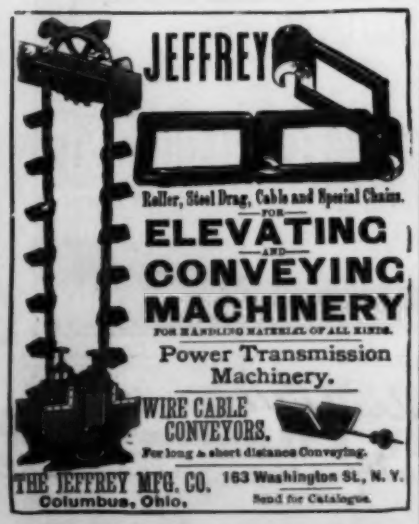

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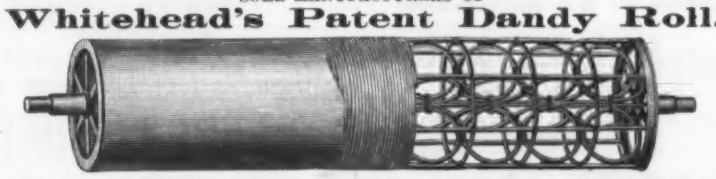

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